

# El Paso

2014 Update

## Fire Department



# Community Risk Analysis and Standards of Cover



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# **El Paso Fire Department**

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September 2014

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## **EXECUTIVE SUMMARY**

The El Paso Fire Department (EPFD) was given legal authority to provide fire protection services in the City of El Paso on December 18, 1882. Since then the department has grown into a full service fire department presently consisting of 867 uniformed and 194 non-uniformed men and women. The department's infrastructure consists of 36 stations, 31 engines, 9 quints, 5 ladders, 6 battalion chief units, 1 squad, 1 specialized hazmat unit, 30 ambulances (to include 4 peak hour units) and 2 Rescue Operations Captains (ROCs). The department's scope of operational services has likewise expanded from just fire protection to now include: emergency medical services, hazardous materials response, technical and high-angle rescue services, water rescue, trench rescue, and aircraft rescue and firefighting.

Support for the incident response force includes a Logistics division for handling supplies, Personal Protective Equipment, Self-Contained Breathing Apparatus, vehicle mechanical maintenance and repair with small engine and tool repair included. A Professional Development division creates, delivers and keeps records for new recruit training and continuing education for firefighting and medical certifications. A Fire Marshal oversees the Fire Prevention division tasked with public education, fire cause and origin investigation, enforcement of building codes, safety codes and arson laws, building plan checking, selected building inspection, and fire hydrant maintenance. General administration includes human resources, financial services, purchasing, and computer support for internal issues, statistical data gathering and interpretation, and reporting for all records.

The City of El Paso is located in far west Texas at the intersection of three states (Texas, New Mexico, and Chihuahua) and two countries (the USA and Mexico). Located in the Chihuahuan Desert and at an elevation of 3,958 feet (1,140 m) above sea level, El Paso is unlike most of its similarly sized municipal counterparts elsewhere in the state. The Rio Grande runs through the heart of El Paso, and defines the border between El Paso and Ciudad Juárez, Mexico to the south. The river is also a natural border between Texas and New Mexico in El Paso's northwest. From the north, the city is almost completely bisected east-west by the Franklin Mountains, which press southward to pinch El Paso's downtown area to a strip of land a few miles wide between the mountain and the nation of Mexico. The regional climate is considered arid with an annual precipitation of 9.85 inches. El Paso is home to approximately 672,000 within the city and covers approximately 260 square miles. The EPFD serves the community with funding from the City of El Paso's general fund, certificates of obligation, grants, investment earnings and gains from the sale of city assets. A brief history of the department and description of its coverage area is included in Section A.

Section D of the standards of cover (SOC) document includes a risk assessment in which a three dimensional risk classification model was used to establish risk categories for portions of the city as a function of incident probability, community consequence, and agency impact. Embedded in the risk classification model are community expectations for the department as well as consideration for key resources and critical infrastructure items. Resultant scores for low, medium, high, and special hazards were used along with critical task analyses of responders to establish baseline, benchmark and ultimately, service level objectives, for each emergency service provided.

Department performance is assessed in Section E and considers equipment distribution and concentration factors. The placement of department resources reflects an historical bias toward protecting more concentrated commercial development. Consequently, the densest placement is in the downtown area, which has the closest spacing of stations as

well as multiple units located in Central Fire Station. Resources become less concentrated the further away from downtown one travels in all directions except south, which includes the border with Mexico.

A drive time analysis was conducted to determine areas in the city that can be reached from a fire station in four minutes or less. The GIS system was used to model all roads that can be driven in the given time period, based on speed limits, one way streets, and other programmed factors. Service gaps were identified based on areas of the city identified as metropolitan or urban population categories that could not be driven to from a fire station in four minutes or less. Additionally, for purposes of unit reliability, a study of incidents was done by demand zone. Incident density or the number of incidents per square mile was used to provide an accurate comparison to these areas that vary greatly in size.

System performance for all services was assessed for years 2010-2014. Results are included in Section E. Though room for improvement exists for all service areas, turnout and response times for medium risk fire and emergency medical calls are approximately 160 percent of the associated benchmark. Call processing times had been consistently above desirable levels. The recent changes in dispatch protocols and associated dispatching equipment and software in 2011 had a positive effect on these times. The effectiveness of these changes can be seen in the 2012 through 2014 data. Longer times in other service categories as well as high risk incidents reflect delayed dispatch times for additional units as scene size up dictates.

Benchmark objectives included in Section F for all EPFD emergency services represent what are considered best practices and were developed using the appropriate standard such as NFPA 1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Department*, 2010 edition, NFPA 1221: *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems* as well as recommendations made by the Center for Public Center Excellence in the *CFAI: Standards of Cover*, 5<sup>th</sup> Ed., and the *CFAI: Fire & Emergency Service Self-Assessment Manual*, 8<sup>th</sup> Ed. ARFF operations are dictated by Federal Aviation Administration (FAA) regulations, *Airport Certifications* in 14 CFR Part 139.

Section G of the SOC describes the process of continuous improvement the department will use prospectively to ensure that baseline performance in all service areas improves over time. The SOC compliance team will continually update the SOC with a process that will begin each March with a revised community risk assessment. The development of system performance analysis and associated recommendations is designed to coincide with the annual budget development process, so funding requests for the upcoming fiscal year may be formulated if necessary. Interim adjustments to the department's service deployment model may be made as necessary if funding allows. Each year, by August, the new SOC will be formally adopted in preparation for the upcoming fiscal year, which begins in September. Performance analysis in the current cycle led to the following recommendations in key areas of the department's standards of cover:

1. Investigate strategies to increase unit availability within demand zones.
2. Look at reliability of GPS and mobile computer terminals to increase quality control of time stamps. Address compliance with unit status updates with training and SOPs.

3. The need to include cross-border risks needs to be analyzed. Ciudad Juarez, Mexico is a major metropolitan city that can pose many risks to the citizens of El Paso. Information needs to be collected about these risks and included in future risk assessments.
4. Target hazard data needs to be collected from the company level to include in the risk assessment. This data needs to be made more readily available and easily accessible to dispatch and line personnel.
5. Low numbers of incident responses in hazardous materials and technical rescue incidents, especially in suburban and rural population categories, have made performance measurement difficult. These responses will need to be evaluated on an incident-by-incident basis to better understand the dynamics contributing to the wide range of times for these incident types.
6. Data transfer between the fire records management system and the iCad system needs to be improved so that reliable incident measurement data is available in the department's records management system for analysis and TXFIRS/NFIRS reporting. A change in EPFD records management system may be necessary for this to occur.
7. Total Response Times (TRT) need to be reviewed and fire department processes and behaviors evaluated for possible efficiencies which are affecting the department's ability to achieve NFPA standards for TRT.
8. Look into a means of confirming whether Critical Task Analyses are meeting the initial needs of the incident, particularly Medium and High Risk Fire Responses.

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## A. Description of Community Served

### Legal Basis

The El Paso Fire Department was established by ordinance on December 12, 1882 to provide structural fire protection within the city. The scope of services to which the department is now involved has significantly expanded; which includes the acquisition of Emergency Medical Services and Aircraft Rescue and Firefighting.

Currently, the City of El Paso operates under a council-manager form of government. Elected representatives, representing eight different city districts, serve in conjunction with a mayor. All power is concentrated in the elected council, which hires a professionally trained manager to carry out its directives and oversee the delivery of public services.

Under administrative direction of the city manager, the fire chief manages, directs, and controls the fire department through subordinate district and division commanders. The City of El Paso is bounded by incorporated and unincorporated areas of El Paso County. Figure 1 displays the political boundaries in the El Paso Area. Mutual aid and automatic aid agreements have been executed with all surrounding entities.

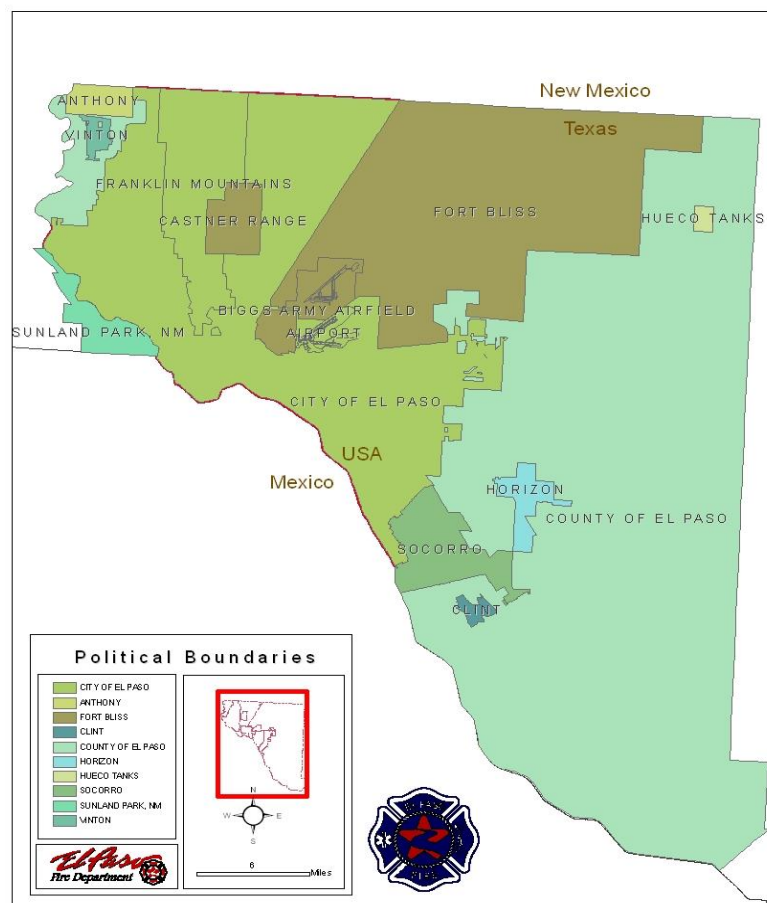


Figure 1. Political Boundaries

## History of the Agency

The City of El Paso, originally known as Franklin, was incorporated in 1873. It was not until January 18, 1882, that El Paso Fire Company No. 1, consisting of volunteer fire fighters, was formed. Lacking a water supply system, Fire Company No. 1 never saw active service. Despite the original company's quick demise, the city recognized the need to provide for fire protection and movement began early to provide the infrastructure to do so.

In the early 1880's, city leaders granted a charter and contract to Mr. Sylvester Watts to build a water supply system for the city. On August 22, 1882, as the water system neared completion, a meeting was called and El Paso Hose Company No. 1 was formed and officers were elected. City council approved the elected fire company officers at its next official meeting.

The newly created fire department's first test came on November 11, 1882 when a pair of one-story, frame lodging houses was destroyed by fire. The infant department had only one-hundred (100) feet of hose and could do little more than splash water on the front doors of the buildings. Ironically, newly elected Assistant Fire Chief, W.H. Carter, owned one of the buildings. The following week, a re-organization meeting was held and Hose Company No. 2 and Hook and Ladder No. 1 were formed. Later, in December 1882, city council passed the Fire Department Ordinance that created and regulated the department. Three members of the council became the city's first fire commissioners.

The young volunteer department received its first permanent station in 1888. The department continued to grow and struggled to provide fire protection. The city experienced several destructive fires resulting in the purchase of the department's first steam fire engine in 1892. City council purchased a Silsby fire engine at a cost of \$3,800, and it arrived in the city in November of 1892. With the arrival of the new fire engine came the need to purchase stronger, 3-ply fire hose, which was subsequently acquired. The city also approved the hiring of its first engineer at a salary of \$90 per month. Jimmy Greaves, an ex-fireman from Waco, Texas, was the city's first paid fireman. His fire protection duties included cleaning the city jail.

The department continued to grow in size and equipment concomitant with city growth and became a fully paid department February 1909. Figure 2 shows historical department performance from 1909 to 1919. The office of fire marshal was later created by city council in June 1910.

In 1916, El Paso's Mayor, Tom Lea, pushed for many city charter changes. Notable among these changes was an effort to raise the employment protections of El Paso's public safety professionals by granting them civil service status. Employees of the fire department were already very active as labor advocates. In fact, a local chapter of the International Association of Firefighters (IAFF) had been established since 1918, the first year of the IAFF's existence. Local 51 continues to advocate for all EPFD firefighters with the exception of the fire chief.

## **Service Milestones**

The El Paso Fire Department service milestones within the past ten years include:

- 2004 - Received a Public Protection Classification rating of 1 by the Insurance Services Office, Inc
- 2005 – Fire Station 33 was built
- 2006 - Fire Station 34 was built
- 2007 – Fire Station 35 was built
- 2012 -
  - Achieved International Accreditation by the Commission Fire Accreditation International
  - Received a Public Protection Classification rating of 1/10 by the Insurance Services Office, Inc.
  - Fire Station 31 was completed with Quint 31 and Rescue 31 placed into service.
  - Placed Rescue 5 in service and three additional Rescue units as staffing permitted
- 2013
  - Fire Station 37 was completed with Quint 37 and Rescue 37 placed into service.
  - Quint 6 was moved to Station 35 and became Quint 35
  - Pumper 35 was moved to Station 6 and became Pumper 6
- 2014
  - Achieved NFPA compliant ALS travel time performance level

## **Financial Basis**

The El Paso Fire Department is funded through the City of El Paso's general fund, certificates of obligation, grants, investment earnings and gains from the sale of assets. The State of Texas does not levy an income tax on individuals or corporations, so income for local governments is almost entirely generated locally through ad valorem and sales taxes. The department generates revenue from ambulance transport fees, which is collected by a third party and deposited directly into the city's general fund. Additionally, funds to operate the Airport Rescue and Firefighting division are expended by the department, but reimbursed by the International Airport which is an established enterprise fund.

## Operations Funding

Table 1.

*Ad Valorem Property Taxes are the Major Source of Revenue for the City*

	Actual	Actual	Actual	Adopted	Adopted
Revenue Source	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Taxes	\$ 317,246,086	\$ 327,659,451	\$ 337,428,439	\$ 356,609,953	\$ 363,171,376
Franchises	\$ 65,484,838	\$ 64,721,740	\$ 64,377,873	\$ 66,084,632	\$ 74,962,269
Service Revenues	\$ 108,371,671	\$ 116,659,317	\$ 117,577,583	\$ 118,547,969	\$ 123,228,431
Operating Revenues	\$ 116,699,720	\$ 117,484,952	\$ 120,867,553	\$ 134,992,870	\$ 136,711,927
Non-operating Revenues	\$ 29,094,989	\$ 25,505,161	\$ 37,633,768	\$ 28,921,649	\$ 25,039,466
Intergovernmental Revenues	\$ 78,613,165	\$ 64,564,336	\$ 48,529,883	\$ 33,034,981	\$ 32,900,903
Transfers In	\$ 176,267,073	\$ 131,682,999	\$ 184,891,384	\$ 63,229,267	\$ 70,223,305
Grand Total	\$ 891,777,542	\$ 848,277,956	\$ 911,306,483	\$ 801,421,321	\$ 826,237,677

Source: City of El Paso Office of Management and Budget Book 2015 p43

As Table 1 shows, almost two-thirds of city revenue is from sources other than taxes such as franchise fees (utility and telecommunications rights) and other miscellaneous sources of revenue. Aside from purchased rights or franchise fees, the city relies on substantial amounts of operating or service revenues. Service revenues include ambulance service, airport rentals, bridge fees, health services, parks and recreation fees, and public transit fares.

## The Budget Process

The El Paso Fire Department budget process mirrors the city of El Paso budget development plan in which internal budget hearings are conducted at the departmental level with input from the division heads and their staff personnel as appropriate. Since the city's fiscal year begins in September of each year, the annual budget proposal process begins in February. The department is provided information on projections from the Office of Management and Budget and asked to reconcile current authorized Full Time Equivalent (FTE) positions. Internal budget preparation begins at that time as all division heads are provided their respective projections and guidance for planning. Division budgets are reviewed with the fire chief and senior administrative staff in March. Departmental budgets are then reviewed by the city manager, deputy city managers and department heads in April. The budget process culminates each year with presentations in July to city council and final approval is typically granted in August.

## Area Description

### **Topography**

The City of El Paso is located in far west Texas at the intersection of three states (Texas, New Mexico, and Chihuahua) and two countries (the USA and Mexico). Located at an elevation of 3,800 feet (1,140 m) above sea level, El Paso is unlike most of its similarly sized municipal counterparts elsewhere in the state. In terms of overall geography, the city is almost completely bisected north-south by the Franklin Mountains, which press southward to pinch El Paso's downtown to only a few miles wide with old Mexico. North Franklin Peak registers an elevation of approximately 7,200 feet and is part of a region approximately 14 miles long and 3 miles wide.

The only major tributary in the region is the Rio Grande River that defines the border between El Paso and Ciudad Juárez, Mexico to the south and the border between Texas and New Mexico in El Paso's northwest. River flow is heavily restricted by dams in New Mexico and its normal depth is only a few feet by the time it reaches El Paso. A physiographic map of Texas is shown in Appendix A.

## **Climate**

El Paso, located within the Chihuahuan Desert, is predominately hot and dry. See Appendix B for El Paso Climate Graphs.

Other weather-related facts:

- Prevailing wind is from the west-southwest (summer – south and east), (winter – from the north)
- Average high temperature during the summer is in the 90's and lows in the 60's; winter has average highs in the 50's and lows in the lower 30's.
- Average annual precipitation: 9.85 inches
- Average annual snowfall: 6.6 inches

## **Population**

According to the most current United States Census Bureau (2010), population estimates the El Paso metropolitan statistical area had a population of 800,647. Latest census estimates for the city place the population at 649,121. Average population density per square mile based on U.S. Census 2010 figures is approximately 2,544. Census data also indicates that 80 percent of El Paso's population considers themselves Hispanic or Latino; 15 percent white; 2.6 percent black or African American; and 1.2 percent Asian. A Native American community (Ysleta Del Sur Pueblo) within El Paso is registered with the state and federal governments and makes up 0.3 percent of El Paso's population. Appendix C displays 2010 Census demographic data for El Paso including population by age and median family income.

The influx at Ft. Bliss, due to the implementation of the Base Realignment and Closure (BRAC) in 2005 by the Department of Defense, has had a large impact on El Paso's demographics. According to the El Paso Regional Growth Management Plan (2008), an additional 37,000 troops and their families were reassigned to Ft. Bliss since 2005. The BRAC-driven growth has led to an increase in housing and school construction.

## **Disaster Potentials**

Possible disaster related hazards include extreme temperatures, dust storms, flooding, hail, tornadoes and earthquakes.

## **Extreme Temperatures**

Extreme temperatures are possible. They have been recorded from as low as -8°F and up to 114° F (National Weather Service, 2010). The most recent event occurred on February 1, 2011, when temperatures fell to single digits and remained there through February 4<sup>th</sup> resulting in widespread water shortages and power outages.

## **Flooding**

Many parts of El Paso are subject to occasional flooding during intense summer monsoons. The most recent event occurred in August of 2013. Heavy rains over a three day period caused overflowing of all the flood-control reservoirs and triggered major flooding city-wide. The flooding necessitated the City of Socorro, Texas to utilize the Mutual Aide Agreement with the City of El Paso.

## **Wind and dust storms**

Dust storms are common in El Paso, especially during the spring season. According to Novlan (2005) of the National Weather Service Forecast Office, "El Paso averages 14.5 significant dust events per year". Normally, wind speeds are 15-30 mph, but significant dust storms may be well over 58 mph and last for more than 2 hours. Peak gusts have been recorded up to 84 mph.

## **Area Development**

El Paso's geographic location puts it squarely within the Paso del Norte U.S.-Mexico trade area. Fundamental to the Paso del Norte trade area is the shared production concept, where Mexican maquiladoras (foreign factories in Mexico) import direct materials, process them and ship assembled goods back to the U.S. Despite the presence of a strong local manufacturing base across the border, El Paso is still home to a number of large manufacturing and supply companies. More than 70 Fortune 500 companies have offices in El Paso. Western Refining is headquartered in El Paso, Texas which owns and operates a 128,000 barrel per day refinery located in the east-central portion of town. Chief manufacturing industries in El Paso include food production, clothing, construction materials, electronics, medical equipment, and plastics. City of El Paso Zoning Map is shown in Appendix D.

The military installation of Fort Bliss is a major contributor to El Paso's economy. It is the site of the United States Army's 1<sup>st</sup> Armored Division and produces approximately \$80 million in products and services annually, with about \$60 million of those products and services purchased locally. Fort Bliss' total economic impact on the area has been estimated at more than \$1 billion, with 37,000 soldiers currently stationed at the base.

In addition to the military, the federal government has a strong presence in El Paso to manage its status and unique issues as a border region. The Immigration and Naturalization Service, the Drug Enforcement Administration, and the Customs and Border Protection Agency all have agency operations in El Paso to regulate traffic and goods through ports of entry from Mexico. Education is a significant contributor to the local economy.

El Paso's three largest school districts are among the highest employers in the area, employing more than 19,000 people. The University of Texas at El Paso (UTEP) also employs approximately 3,600 people. A map of school districts and coverage areas is included in Appendix E.

Call center operations count among some of El Paso's most significant employers. Seven of the top 10 business employers in El Paso are call centers including EchoStar, MCI/GC Services and West Telemarketing. Fourteen of El Paso's largest call centers employ more than 10,000 people (El Paso Parks and Recreation Department, 2006).



## Demographic Features

### **Major Highways and Transportation Infrastructure**

El Paso is served by the El Paso International Airport, Amtrak, Interstate 10, U.S. Highway 54, Spur 601, U.S. Highway 180 and U.S. Highway 62 (Montana Avenue), U.S. Highway 85 (Paisano Drive), Loop 375, Loop 478 (Copia Street-Pershing Drive-Dyer Street), numerous Texas Farm to Market Roads, State Highway 20. The city also shares 4 international bridges and one rail bridge with Ciudad Juárez, Mexico. Railroad lines cross through multiple locations in El Paso. Railroad lines in El Paso are shown in Appendix F. Burlington Northern Santa Fe (BNSF) and Union Pacific (UP) are the major rail operators in town each with its own rail yard in different parts of the city. At both locations, cargo interchange with Mexican railroads takes place.

### **Hazardous Cargo Routes**

Hazardous cargo routes have been established on all the major thoroughfares through and around the city. Figure 2 highlights where non-radioactive hazardous materials are directed to travel through the city.

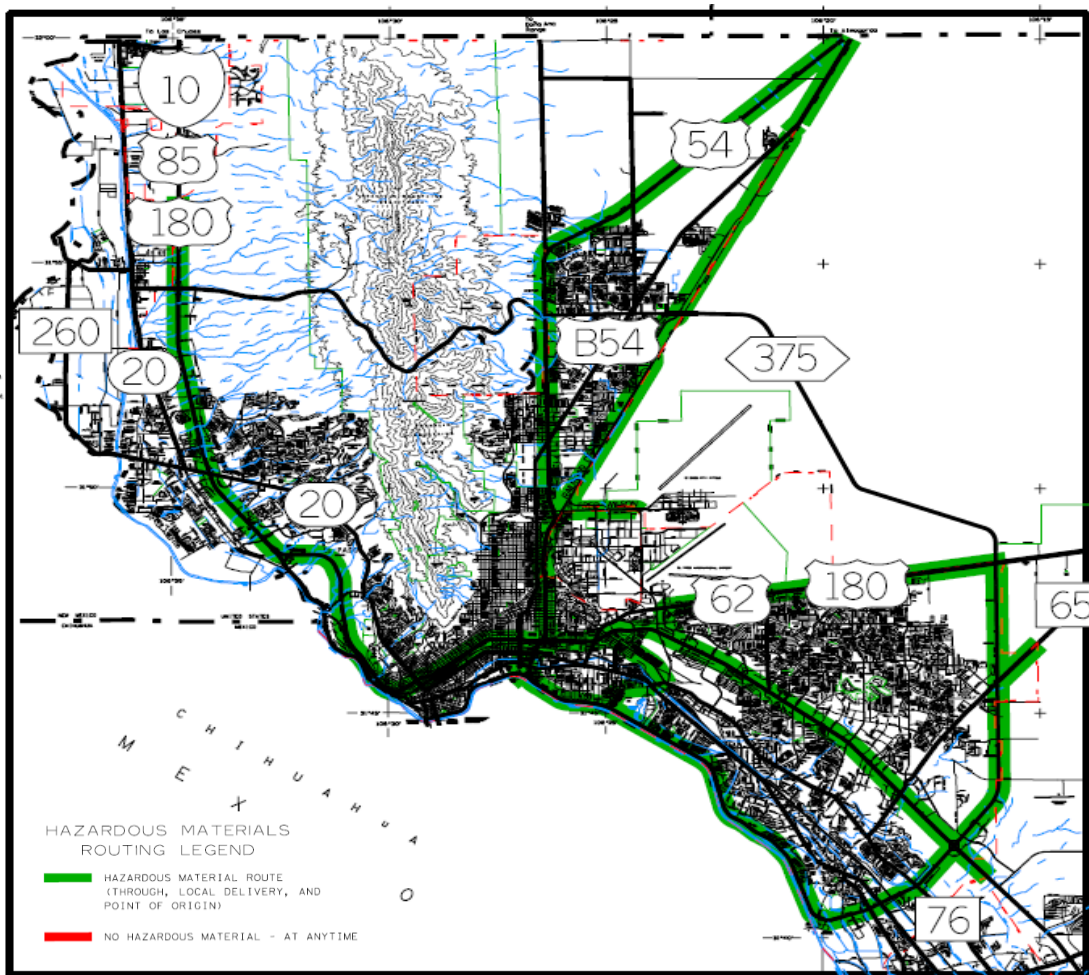


Figure 2. Hazardous Cargo Routes

## B. Services Provided

### Service Delivery Programs

The El Paso Fire Department is a full-service fire department, responsible for responding to and mitigating incidents involving fire, aircraft accidents, medical emergencies, hazardous materials incidents, search and rescue events, and water rescues. Support is also provided for other federal, state and local agencies. The department also provides mutual aid to Fort Bliss Military Base, County of El Paso, Dona Ana County, New Mexico and incorporated cities in close proximity to El Paso. A bi-national Hazardous Materials Emergency Plan exists with Ysleta Del Sur Pueblo, Sunland Park, New Mexico and the municipality of Juarez, Chihuahua.

### **Division of Jurisdictional Area:**

The El Paso Fire Department has divided its jurisdictional area of approximately 260 square miles into 6 Battalion areas. These Battalions are further subdivided into 380 Fire Districts. First due territories for units are composed of combinations of these districts and differ by unit and alarm type. Risk management zones fall within the districts, and divide the district into low, medium, high, and special hazards.

The hierarchy of these planning areas is:

- 1) Jurisdiction** – The jurisdictional area of the El Paso Fire Department, comprising the limits of the City of El Paso. Incorporated and Unincorporated Areas in El Paso are shown in Appendix G.
- 2) Battalions** – Six distinct management areas within city limits, each managed by a Battalion Chief. A map of Battalion District Assignments is illustrated in Appendix H.
- 3) First Due territories** – Although EPFD units are dispatched according to location, each unit has a defined area in which it is designated as the first unit of its type to be dispatched to a particular type and severity of incident (i.e. its “first-due” territory.) These designations are made on documents referred to as run-cards, which define the order of dispatch of units and serve as the back up to the location based dispatch system used by the Computer Aided Dispatch (CAD) software. See Appendix I for a map of station demand zones.
  - a. **Pumper First Due** – Composed of the run-card districts assigning a first due pumper or quint unit to a fire single or any partial/ full response.  
*First-in districts for pumper companies*
  - b. **Aerial First Due**– Composed of the run-card districts assigning a first due ladder or quint unit to a fire single or any partial/ full response.  
*Aerial (ladder) company first due territories*
  - c. **Rescue First Due**– Composed of the run-card districts assigning a first due Rescue unit to a fire or medical single or double, or any partial/ full response.  
*Ambulance (ALS/transport unit) first due territories*
  - d. **First-Responder First Due** - Composed of the run-card districts assigning a first due first-responder unit (pumper, ladder, quint, or other) to a medical single or any partial/ full response.  
*First responder (BLS) first due territories*

**Fire Districts** – 380 distinct response districts, each with a run card assigning a specific assignment of units. Freeway districts were not used in the analysis, since each of these districts lies within a Fire District as seen in a map in Appendix J.

## **Fire Suppression**

Department engines (pumpers) carry 500 gallons of water and 1500 gpm pumps with some having a compressed air foam system (CAFS) with 40 gallon foam tanks. Large diameter (5-inch) hose is standard for supply hose on all pumpers. Quint apparatus likewise contain 1500 gpm pumps and large diameter hose, with aerial devices of heights from 75-100 feet and a full complement of NFPA 1901-compliant ground ladder feet. All ladder trucks are at least 100-feet in deployable length and likewise carry an NFPA-compliant complement of ground ladders.

## **Technical Rescue Services**

Technical rescue services include swift water and still water rescue, rope rescue, confined space rescue, trench rescue and vehicle extrication. The special rescue team is housed at Fire Station 11. In some cases, the team will respond to the county as well if requested by the Sheriff's Office.

## **Medical**

The department provides paramedic and ambulance service to the community. A medical director oversees the operation of the division and ensures a high-degree of emergency medical service is delivered. The El Paso Fire Department uses a combination of full time ambulances and peak time transport units staffed by both firefighters and paramedics providing ALS and MICU within city limits.

## **Hazardous Materials**

The El Paso Fire Department has a single dedicated hazmat task force that is comprised of a designated entry group, a decon group, and an ambulance. This task force has the capability to make protective responses in the event of an incident involving the transport, storage, usage, or manufacture of hazardous materials.

The State Emergency Response Commission has designated El Paso County as an emergency planning district. As such the appropriate state agency, in coordination with the El Paso City/County emergency management coordinator, will determine the response level for all inland and coastal oil spills.

Mutual aid agreements are in place with the 6 western counties of Texas for EPFD to respond to hazmat incidents. These six counties include: El Paso, Hudspeth, Culberson, Jeff Davis, Presidio and Brewster Counties.

## **Specialized Services**

The El Paso Fire Department delivers specialized emergency response in the event of an aircraft accident or disaster on or near the El Paso International Airport (EPIA). Provided for by the EPIA, this aircraft rescue and firefighting (ARFF) response is intended to exceed the minimum requirements for such operations as set forth in the Airport Certification Manual (ACM) and the

Federal Aviation Regulations (FAR) Part 139 whenever possible. Designated as a Class I Airport, the EPIA is certified to serve scheduled operations of large air carrier aircraft as well as unscheduled passenger operations of large air carrier aircraft and/or scheduled operations of small air carrier aircraft. See Appendix K for a map of airport property boundaries.

## Current Deployment

### Points of service delivery

The El Paso Fire Department serves an area of approximately 260 square miles from 36 fire stations including the International Airport. Table 2 lists the number of fire stations and types of apparatus.

**Table 2**

*Number of EPFD Fire Stations and Types of Apparatus*

Fire Stations	36
Pumpers	31
Quints	9
Battalions	6
Ladders	5
Hazmat	1
Squads	1
Full Time Ambulances	26
Peak Hour Ambulances	4
Rescue Captains	2
Decon	2
ARFF\crash units	3
ARFF\command\rescue	2
Water Rescue Unit	1
Wildland Pumpers	2
Mobile Air Supply Unit	1
Rehab Unit	2
Mobile Command Vehicle	1
Search and Rescue Unit	1
Foam Supply Truck	1
Trench Rescue Unit	1
Reserve Battalions	2
Reserve Pumpers	11
Reserve Quints	4
Reserve Ladders	2
Reserve Ambulances	11
Reserve HazMat	1

## Community Response History

An analysis of incidents responded to by the El Paso Fire Department indicated that nearly 70% of all calls were medical in nature as seen in Table 3 and Figure 3. Structural fire incidents accounted for around one percent of all responses. Other specialized responses analyzed, hazardous materials, technical rescue, or aircraft rescue and fire, also comprised very small percentages of the department's responses. Other incidents that did not fit into one of the five service types analyzed comprised around 29% for each year analyzed. These other incidents included other types of fires, false alarms, assistance calls, and other types of service. Figure 4 shows hourly company response frequency by incident type for 2012.

**Table 3**

*EPFD Incident Distribution*

	2010		2011		2012**		2013		2014	
Fire Incidents (Structural)	751	1.05%	794	1.11%	730	1.04%	745	1.00%	679	0.90%
Medical Incidents	49494	69.46%	47422	66.37%	48079	68.44%	49895	67.28%	50905	67.26%
HazMat Incidents	675	0.95%	684	0.96%	657	0.94%	634	0.85%	939	1.24%
Technical Rescue Incidents	122	0.17%	91	0.13%	91	0.13%	97	0.13%	99	0.13%
ARFF Incidents	61	0.09%	54	0.08%	46	0.07%	51	0.07%	69	0.09%
Other Incidents*	20156	28.29%	22409	31.36%	20647	29.39%	22740	30.66%	22998	30.38%
Total	71259	100%	71454	100%	70250	100%	74162	100%	75689	100%

\* Emergency and nonemergency incidents not classified in the 5 service types

\*\* Reporting year was changed to reflect fiscal year

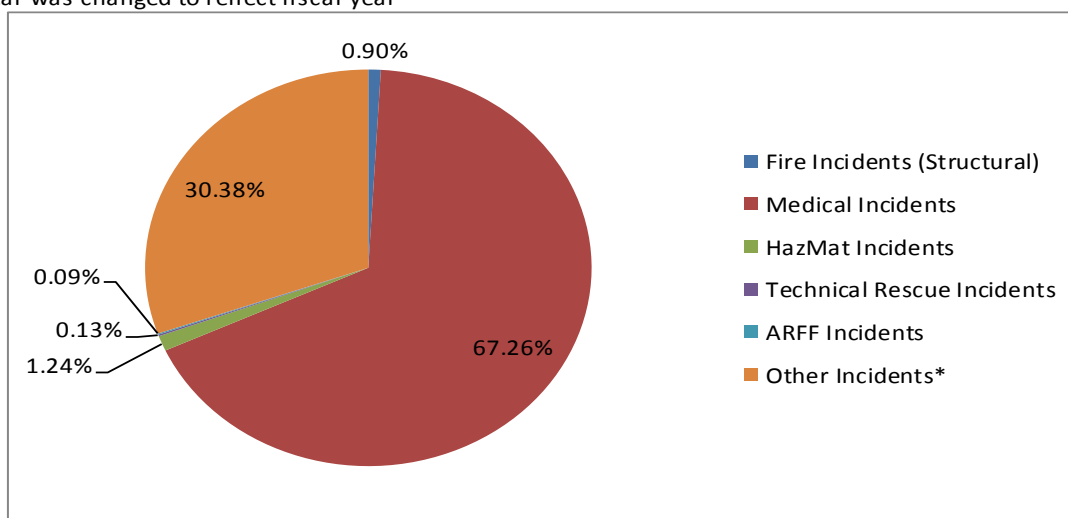


Figure 3. Community Response History

# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

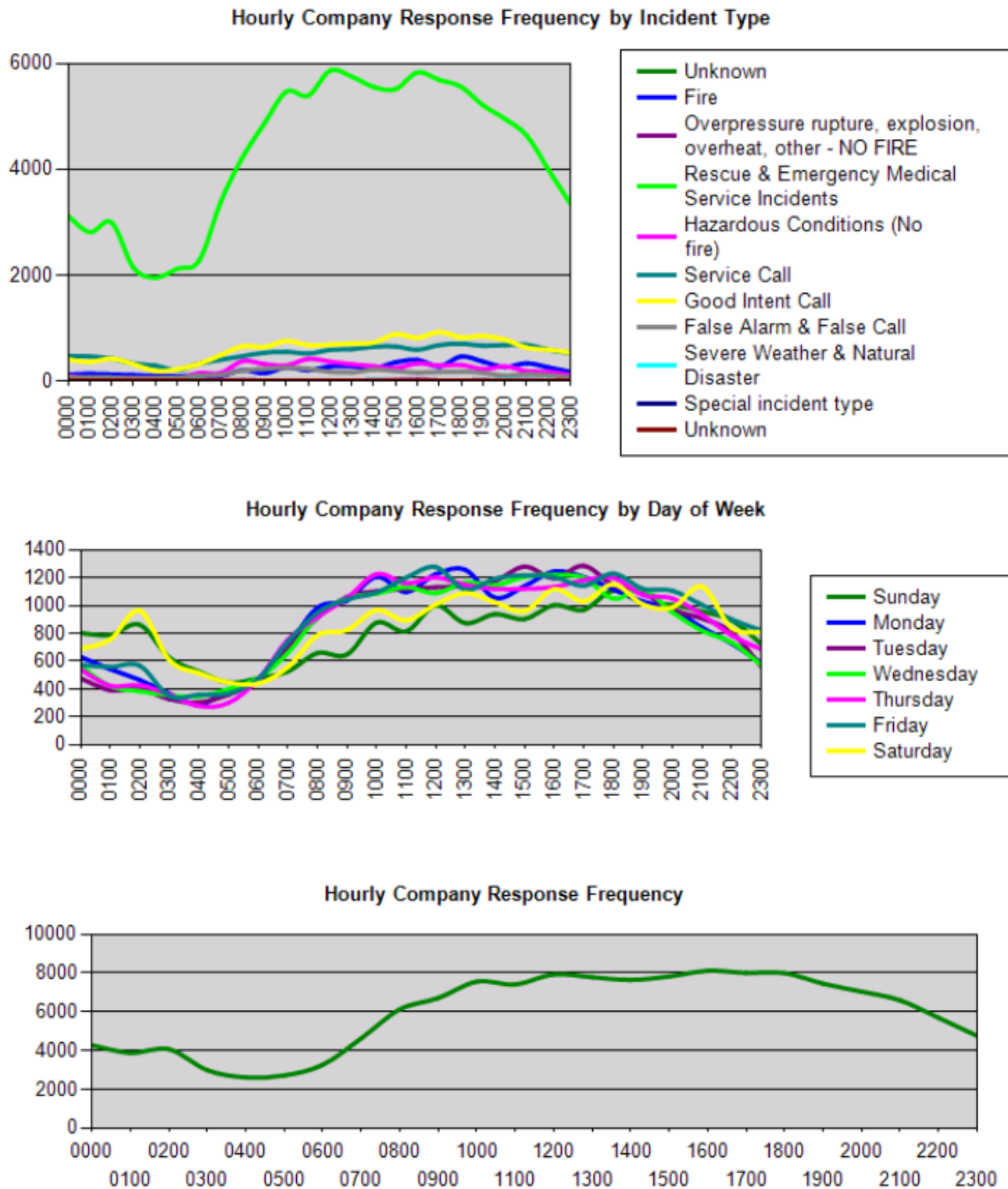


Figure 4. FY 2014 Hourly Response Frequencies

## C. Community Expectations and Performance Goals

### Community Service Expectations

Lessons learned during the development of the department's strategic plan in 2009-2010 marked the importance of customer satisfaction. The external stakeholder group findings ranked the department's services on the customer's priorities. Those priorities are listed in order in Table 4.

**Table 4**

*Community Rankings for EPFD Services*

<b>Services</b>	<b>Ranking</b>	<b>Score</b>
Emergency Medical Services	1	359
Fire Suppression	2	290
Basic and Technical Rescue	3	287
Hazardous Materials Mitigation	4	202
Domestic Preparedness Planning and Response	5	168
Fire Prevention	6	162
Aviation Rescue and Firefighting	7	161
Public Fire/EMS Safety Education	8	111
Fire Investigation	9	93

Understanding what the community expects of the department is instrumental in developing short- and long-term goals to meet the community's needs. The external stakeholders who represent the various sections of the community developed a list of 80 expectations and put them in order of priority. Listed below are the top 10:

1. Quick, prompt response.
2. Perform in a professional manner.
3. Properly trained personnel.
4. Sufficient, proper equipment to perform the job.
5. Perform in a courteous manner at all times.
6. Utilization of the latest technology.
7. Knowledge of the job.
8. Response within 5 minutes.
9. Trained to the utmost professional level.
10. Fire truck drivers knowledgeable as to where they are going.

## Performance Expectation Goals

### Mission Statement

In 2012, the executive planning team revised the department's mission statement to ensure that community expectations are met:

*The mission of the fire department is to provide emergency response, prevention, preparedness, and education to residents, businesses and visitors of our city so they can live safely and prosper in a hazard resilient community.*

### Performance Goals

The El Paso Fire Department has established performance goals based on national standards. The goal of these measures is to meet the mission of the department, particularly in protecting life. Several time sensitive conditions exist to prompt the development of these objectives.

In medical emergencies, sudden cardiac arrest may become irreversible if ALS intervention is not implemented early. According to Ludwig (2004), "The American Heart Association's scientific position is that brain death and permanent death start to occur in 4-6 minutes after someone experiences cardiac arrest". ALS intervention including defibrillation within these parameters will improve the chances of successful resuscitation. Studies show that chances of survival are reduced by 7%-10% with every minute that passes without ALS intervention. The graph in Figure 5 displays the time versus defibrillation success.

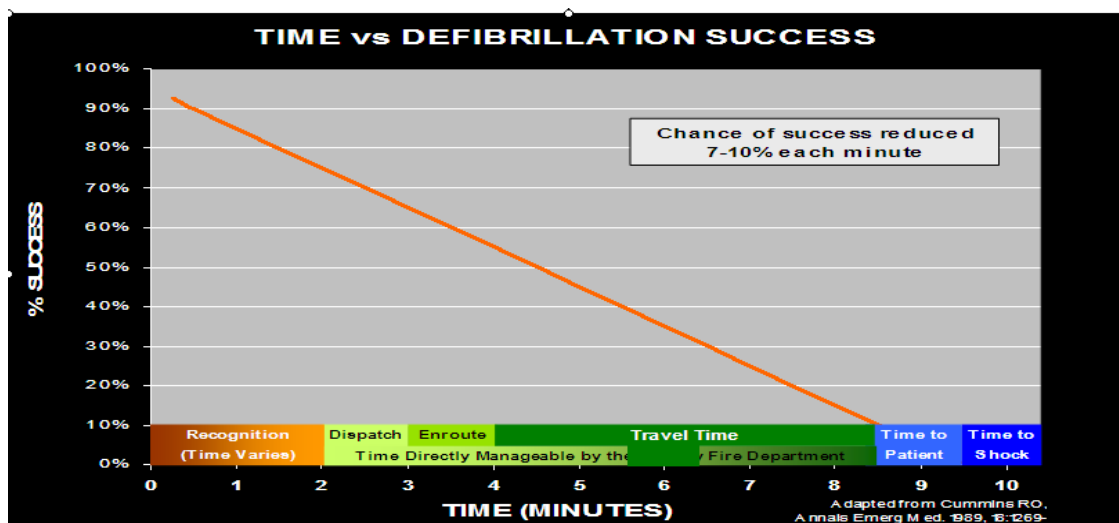


Figure 5. Time vs. Defibrillation



In fire incidents, a dangerous event called flashover has been shown to develop within as little as eight minutes from the start of a fire. During flashover, the contents of the fire area reach ignition temperature and breaks into open flame at once. When this occurs, the chance of a person surviving in, or near the area of origin, decreases dramatically. Additionally, the rate of combustion increases quickly at flashover, spreading the fire and requiring more resources to contain it. The graph in Figure 6 displays the time versus products of combustion.

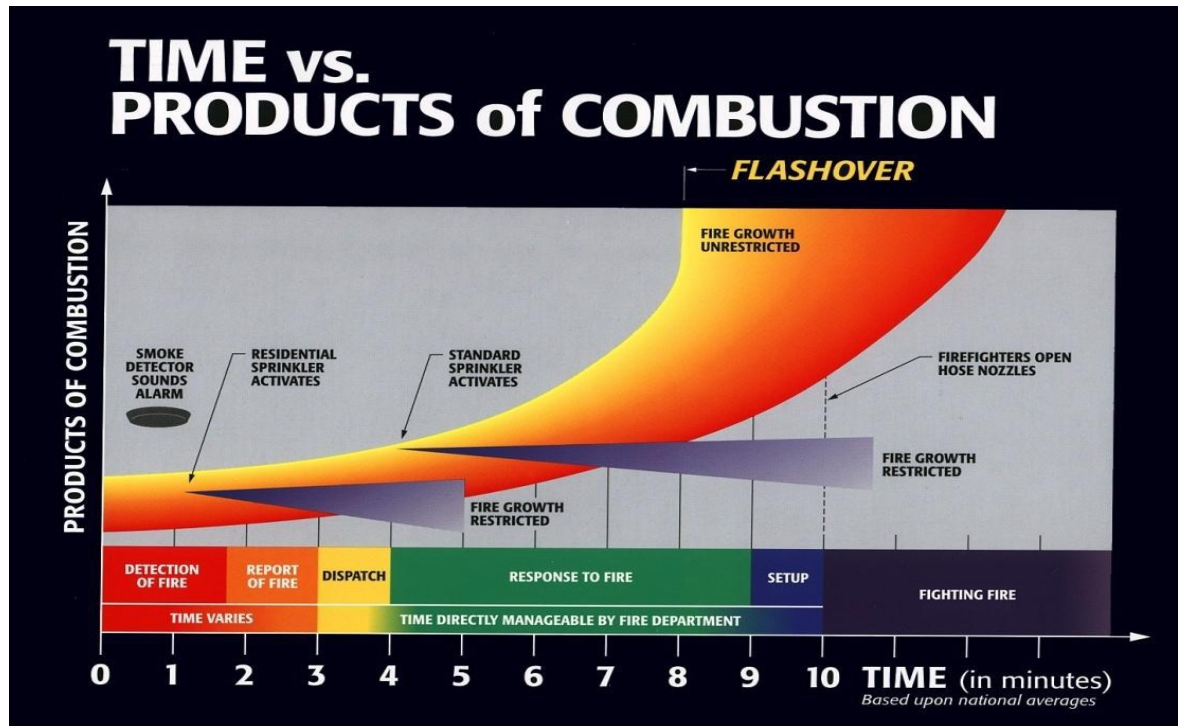


Figure 6. Time vs. Products of Combustion

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## D. Community Risk Assessment and Risk Levels

Hazards, in the context of the El Paso community, are any dangerous condition with the potential to cause harm to people and loss to property, such as fires, medical emergencies, and hazardous material releases. The El Paso Fire Department is charged with the responsibility to respond to dangerous conditions throughout the city. Risk is the level of exposure to a hazard. A risk assessment was conducted to find out what the hazards are in the City of El Paso and the levels of risk associated with them.

### Risk Assessment Methodology

The department conducted its risk assessment by considering risks defined by the characteristics of buildings, occupants, or processes in a geographic area. These were calculated using a *Geographic Information System (GIS)* in a process described in Appendix N. The output of this process is a system of parcel based risk management zones. These risk management zones classify all areas of the City of El Paso into the following:

#### Risk categories

- Low – Risks requiring a minimal commitment of resources, generally a ***single response***
- Medium– Risks requiring an initial dispatch of multiple resources, generally a ***primary response***
- High– Risks requiring a full multi-unit response, generally a ***full response*** as defined by EPFD response policies (see definition in Glossary)
- Special–Risks requiring a substantial commitment of resources or posing a potential for extreme loss. This includes designated target hazards.

This methodology was designed to conform to recommendations made by the Center for Public Center Excellence in the *CFAI: Standards of Cover, 5<sup>rd</sup> Ed.*, and the *CFAI: Fire & Emergency Service Self-Assessment Manual, 8<sup>th</sup> Ed.*

The community risk assessment was performed for the following:

#### Service types:

- Fire –Locations and circumstances that would contribute to a danger to life and property by fire.
- Emergency medical emergencies –An analysis of the distribution of the type and quantity of acute events requiring emergency medical intervention on the scene and of locations that pose a greater likelihood of these events occurring.
- Hazardous materials – Facilities or areas that use, store, or transport hazardous materials in types/ quantities that would pose a danger to life, property, or the environment if released or mishandled.
- Technical rescue – Locations that pose a greater risk of incurring a special rescue circumstance, including industrial and urban high angle rescue, water rescue. Wilderness search and rescue was not included in this definition due to the dynamic nature of this type of event.
- Aircraft Rescue and Firefighting (ARFF) – Locations posing a greater risk of an aircraft related emergency.

## Population Categories

The following population categories, as seen in Appendix M, have been assigned to each fire district based on population density, accessibility, and overall land use

- **Metropolitan:** Areas of high density residential or commercial development, with a calculated population density above 3000 people per square mile. Areas with lower population density but comprising highly developed commercial areas with dense street networks within city core areas.
- **Urban:** Population density over 2000, but not exceeding 3000, people per square mile. Areas with lower population density but comprising highly developed commercial areas with dense street networks near the edge of city limits, or less developed commercial areas with city core. Highly industrialized areas.
- **Suburban:** Population density between 1000 and 2000, generally on the outskirts of city limits. Areas with lower population density but comprising less developed commercial areas near the edge of city limits.
- **Rural:** Districts that have a population density of less than 1000 people per square mile, including areas that are generally unpopulated but have road coverage.
- **Wilderness:** Districts that are generally inaccessible by motorized vehicles and are unpopulated. The Franklin Mountains lie within 14 fire districts that meet this criterion and composed of over 54 square miles within the jurisdictional territory of the El Paso Fire Department.

The 2010 U.S. Census Bureau Census Tract was utilized to categorize all areas of the department's service area.

## Risk Assessment Input

Consideration factors for risk assessment input can be found in Appendix N - Risk Assessment Methodology. Appendix O displays a table of risk assessment factors, categories, and rationale for all types of incidents

## Risk Assessment Output

### Fire Suppression Services

#### *Probability Factors*

Incidents involving structural fire suppression as the primary mitigation activity were considered for this section. Probability of fire incidents were assessed in part by the history of such incidents occurring. Table 5 displays the results of a five year analysis of all fire incidents within the City of El Paso.

**Table 5**

*Summary of Fire Incidents by Type (5 years)*

Fire Category	2010-					
	2014	2014	2013	2012	2011	2010
Structure Fires	43.37%	640	696	693	761	725
Mobile Property as Residence Fires	0.86%	7	11	10	27	15
Mobile Property as Vehicle Fires	17.58%	210	262	266	348	339
Natural Vegetation Fires	19.49%	199	295	291	401	394
Outside Rubbish Fires	16.18%	226	268	268	298	251
Special Outside Fires	2.36%	34	42	40	45	30
Cultivated Vegetation, Crop Fires	0.16%	3	2	2	6	0

#### *Community Consequence Factors*

In considering the effect a major fire would have on the community, city infrastructure, especially government facilities, utility locations, and medical facilities, was assessed. Incidents at these locations could cause loss of essential services. Additionally, major employers were considered for economic impact to the community. Large residential complexes were assessed for possible major loss of life, and for the need to relocate a large number of people. Finally, the cultural impact of a major fire was considered. The city contains several historic zones. Some landmarks of local cultural identity were identified, as well as those specific to cultural groups of the area (the Tigua Indian (Ysleta del Sur) reservation, local historic missions, and the Holocaust museum, to name a few).

#### *Agency Impact*

Battalion 1 covers the oldest part of town, and the building stock is correspondingly older and more susceptible to fire. The Fire Prevention Division has addressed the large number of vacant buildings in this area to enforce know vacant buildings comply with applicable Vacant Building Ordinance. Downtown also contains the highest concentration of high rise buildings. The downtown area also presents some challenges to fire apparatus access to incidents, with narrower streets and alleyways, as well as more one way streets than any other area. The southern part of the city lies next to the US/ Mexico border, with the Rio Grande river and numerous canals on the south. It contains a major railroad yard and Interstate 10. Although growth in the downtown area is limited, city initiatives to increase the residential areas in this area are likely to change the demographics in future years.

## *Classification Methodology*

Fire incidents are classified according to the El Paso Fire Department Response Manual, Section 7.

## *Critical Task Analysis*

Life safety is the top priority during initial fire emergency operations. After life safety has been considered, the remaining priorities in order of importance include exposure protection, control and containment, ventilation, extinguishment, salvage (property conservation), overhaul, and investigation. The department utilizes the guidelines set forth by NIST 22 study and NFPA 1710 for initial fire ground tasks. See Appendix Q for NIST critical Tasks at a fire incident and Appendix R for NFPA initial full alarm assignment capability tables.

## **Low risk fires**

Typically involve the response of single fire unit with pump capabilities. These types of fire incidents should normally be minor in intensity, magnitude or scope and may be effectively handled by one company. Low risk fires usually involve brush, dumpster, and vehicle fires with no exposure threats to structures. Table 6 depicts the critical tasking and staff necessary for mitigation and the resources assigned by standard operating guidelines.

**Table 6**

*Critical Task Analysis for a Low Risk Fire*

<b>Critical Task</b>	<b>Personnel Needed</b>	<b>Dispatched Units</b>	<b>Crew</b>
Command / Safety	1	1 Pumper	3
Fire Attack	1	<b>Dispatched</b>	<b>3</b>
Pump Operator	1		
<b>Total ERF Needed</b>	<b>3</b>		

Note: Minimum apparatus, equipment, and pump capacity needed: 1- 1500 GPM pumper with full complement of equipment

Medium risk fires will typically involve the response of a complete primary first alarm assignment from the EPFD. These types of fire incidents should normally be confined to a single room or involve only contents. Medium risk fires usually involve a single family home or residence with little risk of extension to surrounding exposures. Table 7 depicts the critical tasking and staff necessary for mitigation and the resources assigned by standard operating guidelines.

# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

**Table 7**

*Critical Task Analysis for a Medium Risk Fire*

<b>Critical Task</b>	<b>Personnel Needed</b>	<b>Dispatched Units</b>	<b>Crew</b>
Command	1	3 Pumpers	9
Safety	1	2 Aerials	6
Accountability	1	1 ROC	1
Fire Attack	3	1 HazMat/Squad	3
Utilities/Ventilation	3	2 Battalion	4
Forcible Entry/ Search and Rescue	3	1 Rescue	2
		<b>Dispatched</b>	<b>25</b>
Backup lines	3		
RIC	3		
Atmospheric Monitoring	1		
<b>Total ERF Needed</b>	<b>19</b>		

Note: Minimum apparatus, equipment, and pump capacity needed with this ERF: 2- 1500 GPM pumpers and 1 aerial, each with a full complement of equipment.

Like medium risk fires, high risk fires also involve an initial full primary alarm assignment, but with the addition of one pumper, one ambulance and two battalion units. High risk fires have the potential to involve not only an entire structure, but exposures as well. Often, high risk fires will involve the request for additional alarm assignments, though those additional resources are not reflected in the CTA. Table 8 lists the tasks, the required number of minimum staffing and the resources typically deployed upon dispatch.

**Table 8**

*Critical Task Analysis for a High Risk Fire*

<b>Critical Task</b>	<b>Personnel Needed</b>	<b>Dispatched Units</b>	<b>Crew</b>
Command	1	4 Pumper	12
Safety	1	2 Aerials	6
Accountability	1	1 HazMat/Squad	3
Fire Attack	5	3 Battalion	6
Back-up lines	5	2 Rescue	4
Utilities/Ventilation	3	<b>Dispatched</b>	<b>31</b>
Forcible Entry/ Search and Rescue	3		
RIC	3		
Atmospheric Monitoring	1		
Division Supervisor	2		
<b>Total ERF Needed</b>	<b>25</b>		

Note: Minimum apparatus, equipment, and pump capacity needed with this ERF: 3- 1500 GPM pumpers and 1 aerial, each with a full complement of equipment.

## Emergency Medical Services

### Probability Factors

The El Paso Fire Department responds to over 75,000 calls annually; about 73% are medical responses. Table 9 below indicates the density of medical incidents by each battalion area.

**Table 9**  
*FY 2014 Chief Complaints*

Chief Complaint	Count	Percentage of Total	Chief Complaint	Count	Percentage of Total
Abd Pain	3154	6.23%	Heart Problems	199	0.39%
Allergies	190	0.38%	Headache	528	1.04%
Animal Bite	119	0.23%	Heat/Cold	36	0.07%
Assault	1360	2.68%	Hemorrhage	442	0.87%
Back Pain	906	1.79%	Ind Accident	16	0.03%
Burns	72	0.14%	Ingestion/Poison	738	1.46%
C-Arrest	371	0.73%	MCI	23	0.05%
CO Poison	131	0.26%	MVA	5340	10.54%
Chest Pain	2355	4.65%	Psych	1494	2.95%
Childbirth	533	1.05%	Respiratory	3018	5.96%
Choking	106	0.21%	Seizures	1867	3.69%
DOS	326	0.64%	Service Call	973	1.92%
Diabetic	1424	2.81%	Sick Person	15928	31.44%
Drowning	15	0.03%	Stroke	489	0.97%
Electrocution	14	0.03%	Transfer	117	0.23%
Eye Injury	23	0.05%	Trauma	1957	3.86%
Falls	4077	8.05%	Unconscious	1473	2.91%
Fire/Fire Scene	336	0.66%	Unk/Man Down	359	0.71%
GSW/Stab	149	0.29%	Total	50658	100%

### Community Consequence Factors

It is recognized that the community consequence of a medical emergency is difficult to measure, and varies greatly with the risk level and the type of medical emergency. Most emergencies will not have consequences outside the immediate victim and their family. It is recognized that major medical emergencies, classified as mass casualty, may result from natural disasters, terrorist attacks, or transportation/ industrial incidents. Such incidents could tax the ability of the medical infrastructure of the city. Factors included in the risk analysis were government facilities, medical facilities, and major employers, where the loss of many employees would cause economic hardship to the community or loss of services. Additionally major medical incidents at locations where a large number of people were in need of assistance, such as nursing homes, hospitals, and schools, would cause a greater need for resources for the department in attempting to mitigate the incident.

### Agency Impact

The Franklin Mountain inhibits units from the west and northeast sides of town to effectively provide overlapping coverage. If either side of town becomes overloaded with medical emergencies, units from other parts of the city must be relocated to provide coverage. In addition to the mountain, El Paso essentially has only two major transportation arteries (I-10 and US54) to rapidly move about from each side of town. Given any situation that would limit the mobility along these arteries the



level of service provided could be severely hampered. Growth on the east side of the city has outpaced the department's growth on that same side of town. Fort Bliss, Texas, situated between the city's northeast and east side also creates a response hindrance. Units are not allowed to traverse this military base to quickly gain access to other parts of town.

### ***Classification Methodology***

All members of the EPFD are trained at a minimum to the Emergency Medical Technician-Basic (EMT-B) level for the state of Texas. Additionally, all firefighting units carry medical equipment and supplies that allow them to be used as first responder vehicles. Consequently, all firefighting companies are basic life support (BLS) units and can handle critical patient care prior to the arrival of ambulance units. Eighty percent of structural units have a EMT-Paramedic permanently assigned and all of these units have ALS equipment. Ambulance units can be staffed with Emergency Medical Technician-Paramedics (EMT-P), Emergency Medical Technician-Intermediate (EMT-I), or with EMT-Bs.

Ambulance designations are determined by the structural certification held by the personnel staffing the unit.

- **Rescue** is the designation given to ambulances staffed by a minimum of two structurally certified personnel.
- **Light Rescue** is the designation for ambulances staffed with one structurally certified and one non-structurally certified personnel.
- **Medic** is the designation given to ambulances staffed without structurally certified firefighting personnel. Non-structurally certified personnel are prohibited from engaging in firefighting activities or from entering hazardous atmospheres where the use of SCBA is required.

Rescue units are permanently deployed as 24 hour units. These units are temporarily designated as light rescue if they are not staffed by two structurally certified personnel. Medic units are staffed Monday through Friday from 1100 to 1900 hours. These deploy from stations 9, 18, 21 and 22. Medics are sometimes used as transport units when noncritical patient transportation is required to a location out of a Rescue's catchment area.

### ***Critical Task Analysis***

Incidents requiring emergency medical treatment and possible transport that are not classified as technical rescue were considered for this section. As a fire-based EMS service provider, the EPFD is responsible not only for first responder or basic life support (BLS), but also advanced life support (ALS) and transport to emergency medical facilities. Like fire emergencies, the risk assessment for emergency medical incidents has been categorized as low, medium, or high risk.

Low risk medical emergencies typically will involve minimal intervention on the part of response resources. One crew of two or three personnel is often sufficient to establish contact and assess the patient. Transport is possible, but a third party provider will be requested to provide the service. Table 10 depicts the CTA for a low risk medical emergency.

# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

**Table 10**

*Critical Task Analysis for a Low Risk Medical Emergency*

Critical Task	Personnel Needed	Dispatched Units	Crew
Command	1	1 Structural	2 or 3
Treatment	1	<b>Or</b>	
<b>Total ERF Needed</b>	<b>2</b>	1 Ambulance	2
		<b>Dispatched</b>	<b>2 or 3</b>

Note: Minimum apparatus and equipment needed: any apparatus with BLS medical equipment

Medium risk medical emergencies, on the other hand, will involve more advanced ALS treatment and likely transport to the nearest emergency medical facility in accordance with the department's hospital catchment protocols. Table 11 lists the critical tasks necessary for medium risk medical emergency incidents and resources needed.

**Table 11**

*Critical Task Analysis for a Medium Risk Medical Emergency*

Critical Task	Personnel Needed	Dispatched Units	Crew
Command	1	1 Structural	2 or 3
ALS Treatment	1	<b>Or</b>	
<b>Total ERF Needed</b>	<b>2</b>	1 Ambulance	2
		<b>Dispatched</b>	<b>2 or 3</b>

Note: Minimum apparatus and equipment needed with this ERF: ALS unit

High risk medical emergencies are those events that would require the presence of enough personnel to handle multiple patients or tasks associated with technical rescues. In many situations, this would necessitate a primary response in accordance with EPFD dispatch procedures. Table 12 lists the CTA for high risk medical emergency incidents and the resources typically dispatched.

**Table 12**

*Critical Task Analysis for a High Risk Medical Emergency*

Critical Task	Personnel Needed	Dispatched Units	Crew
Command	1	3 Pumper	9
Safety	1	2 Aerials	6
Triage	3*	1 ROC	1
ALS Treatment	2*	2 Battalion	4
BLS Treatment	9*	1 Rescue	2*
Transport Officer	1	<b>Dispatched</b>	<b>22*</b>
<b>Total ERF Needed</b>	<b>17</b>		

\*Depending on situation/ number of patients, resource needs and tasks may increase

Note: Minimum apparatus and equipment needed with this ERF: 1- ALS transport unit.

## Hazardous Materials Services

### *Probability Factors*

The greatest concentration of hazardous materials incidents occur in the central part of El Paso. Secondary to this is the east side of town, with Battalions 3 and 4, each having approximately the same density of incidents. When analyzed by number, there is a fairly even distribution of hazmat incidents between all Battalion areas. In addition to the incident history, locations with major industrial sites were considered, as well as transportation routes.

### *Community Consequence Factors*

Those areas that were in close proximity to residential areas, senior or medical care facilities, schools, and daycares were primarily considered. Next were areas that promoted the spread of a spilled liquid or heavier than air gas. These included canals and other waterways and arroyos and other low areas that would exacerbate the human and environmental impact of a hazmat incident.

### *Agency Factors*

Central El Paso and the southern portion of Battalions 3 and 4 contain a larger number of older industrial sites. This area also contains the majority of canals, which could possibly transfer spilled hazardous materials. In addition, this area is divided from the northern part of town by Interstate 10, a major thoroughfare of interstate commerce. Parallel to I-10 runs the major rail lines, also providing a major transportation artery to the Southwest. Downtown El Paso is also the major port of entry between the United States and Mexico. Major hazardous materials shipments travel over the border and through downtown El Paso both by rail and truck.

### *Classification Methodology*

Hazmat incidents are classified per El Paso Fire Department Response manual.

### *Critical Task Analysis*

Low risk hazardous materials emergencies are those incidents where entry into a toxic environment with advanced protection is unnecessary and evacuation beyond the spill origin is unlikely or unnecessary. Many routine traffic accidents and small chemical spills fall into this type of emergency. Specialized hazmat resources will respond to monitor or act as a technical resource, but does not include a task force response. Table 13 breaks down the CTA for this level of hazmat risk and the normal response complement from the EPFD.

**Table 13**

*Critical Task Analysis for a Low Risk Hazmat Emergency (Single Response)*

Critical Task	Personnel Needed	Dispatched Units	Crew
Command/Safety	1	1 Suppression Unit	3
Mitigation	2	Dispatched	3
<b>Total ERF Needed</b>	<b>3</b>		

## COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

Medium risk hazmat emergencies will warrant a primary response with entry team members alerted to the situation and acting as technical advisors if needed. Under EPFD standard operating procedures, these incidents would be considered condition 2 hazmat emergencies requiring limited evacuations or protect-in-place procedures for affected populations. Table 14 provides the CTA breakdown and initial response personnel used for the risk analysis and historical response analysis.

**Table 14**

*Critical Task Analysis for a Medium Risk Hazmat Emergency (Primary Response)*

Critical Task	Personnel Needed	Dispatched Units	Crew
Command	1	2 Battalion	4
Safety	1	3 Pumpers	9
Accountability	1	2 Ladders	6
Water Supply	6	1 Rescue	2
Mitigation	3	<b>Dispatched</b>	<b>21</b>
Decon	3		
Rehab	3		
Air Monitoring	1		
<b>Total ERF Needed</b>	<b>19</b>		

High risk hazmat incidents necessitate the deployment of the hazardous materials task force along with a primary response of structural firefighting companies. High risk hazmat incidents have the likelihood of involving outside resource requests and will necessitate large-scale evacuations. The CTA for high risk hazmat incidents is depicted in Table 15.

**Table 15**

*Critical Task Analysis for a High Risk Hazmat Emergency*

Critical Task	Personnel Needed	Dispatched Units	Crew
Command	1	2 Battalion	4
Safety	1	3 Pumpers	9
Accountability	1	2 Ladders	6
Water Supply	6	1 Hazmat	3
Air Monitoring	1	1 Squad	3
Rehab	3	2 Rescue	4
Task Force Leader	1	1 Decon	6
Entry Team Officer	1	1 ROC	1
Entry Team	2	1 Rehab	3
Entry Team Support	2	<b>Dispatched</b>	<b>39</b>
Back Up Team	2		
Back Up Team Support	2		
Decon Team	3		
Medical Evaluation	2		
Research	2		
Mitigation Support	3		
Decon Support	3		
<b>Total ERF Needed</b>	<b>36</b>		

Note: Min. apparatus and equipment needed: Hazmat 1, 1 - Decon, each with full complement of equipment.

## **Technical Rescue Services**

The technical rescue services provided by the EPFD include: confined space, rope, trench, and water rescue.

### ***Probability Factors***

Benchmarks have been implemented to track these types of incidents. The greatest density of these incidents historically is in the downtown area (Battalion 1), and the least in the far east-side (Battalion 6).

### ***Community Consequence Factors***

Depending on the scope of the incident, community consequences would exist in the case of a large scale rescue, such as a building collapse or major flood. These technical rescue incidents are those requiring dispatch of a special team or resource.

### ***Agency Impact***

Confined space, rope, and trench rescues could occur at any location in the city in which industrial sites are located, which include all Battalions. Western refinery, Phelps Dodge, the water treatment plants, and similar sites offer a higher likelihood of these incidents. Rescues in locations near or in the Franklin Mountains often require high angle rescue services. For water rescue, the locations along the canals and the Rio Grande are the most common, though due to the likelihood of flash floods any drainage ditch or low lying area could become a swift water location. Dedicated teams do not respond solely to these types of incident. Hence, an occurrence would deplete resources in the area of town where these teams are housed.

### ***Classification Methodology***

These incidents are classified according to the El Paso Fire Department Operational Procedures

### ***Critical Task Analysis***

## **Confined Space Rescue**

Confined space operations are performed by the team housed at station 11. All members of the team are hazardous materials technicians as well as confined space technicians in accordance with NFPA 1006. Any call for a confined space rescue will activate the technical rescue team known as Special Rescue 11 (crews from Pumper 11 and Ladder 11) and will mobilize the hazardous materials team for air monitoring purposes, among other first responding units. Table 16 depicts the CTA for a confined space emergency.

**Table 16**

*Critical Task Analysis for a Confined Space Emergency*

Critical Task	Personnel Needed	Dispatched Units	Crew
Command	1	1 Battalion	2
Accountability	1	2 Pumpers	6
Decon	4	1 Ambulance	2
Safety	1	Pumper 11 (Special Rescue)	3
Entry Team Officer	1	Ladder 11 (Special Rescue)	3
Task Force Leader	1	1 Decon Team	6
Attendant/Edge Master	1	Squad 1	3
Entry Team	2	1 ROC	1
Backup Team	2	Hazmat 1	3
Systems Team	6	<b>Dispatched</b>	<b>29</b>
ALS	1		
BLS	1		
Medical Eval	2		
Air Monitoring	3		
<b>Total ERF Needed</b>	<b>27</b>		

## Rope Rescue

Like confined space incidents, rope rescue calls will likewise initiate activation of the technical rescue team. However, since air monitoring is not a typical requirement for these types of emergencies, the hazardous materials team is not routinely activated as well. Additionally, all ladder companies maintain a complement of rope rescue equipment that allows them to function as support for the technical rescue team during an incident. Table 17 depicts the CTA for a rope rescue emergency.

**Table 17**

*Critical Task Analysis for a Rope Rescue Emergency*

Critical Task	Personnel Needed	Dispatched Units	Crew
Command	1	1 Battalion	2
Accountability	1	2 Pumpers	6
Safety	1	1 Ambulance	2
Task Force Leader	1	Pumper 11 (Special Rescue)	3
Attendant/Edge Master	1	Ladder 11 (Special Rescue)	3
Rescuer	2	Squad 1	3
Backup	2	1 ROC	1
Systems Team	6	Hazmat 1	3
ALS	1	<b>Dispatched</b>	<b>23</b>
BLS	1		
Medical Eval/ Standby	2		
<b>Total ERF Needed</b>	<b>19</b>		

## Trench Rescue

Trench emergencies are normally responded to by the technical rescue team with the trench rescue vehicle. This vehicle is equipped with shoring and other excavation equipment allowing the team to affect rescues in the event of trench collapses. In the event of a trench rescue incident, first responding companies will normally respond along with the technical rescue team to assist with scene safety activities. Table 18 depicts the CTA for a trench rescue emergency.

**Table 18**

*Critical Task Analysis for a Trench Rescue Emergency*

<b>Critical Task</b>	<b>Personnel Needed</b>	<b>Dispatched Units</b>	<b>Crew</b>
Command	1	1 Battalion	2
Accountability	1	2 Pumpers	6
Safety	1	1 Ambulance	2
Task Force Leader	1	Pumper 11(Special Rescue)	3
Entry Team Officer	1	Ladder 11 (Special Rescue)	3
Entry Team	2	1 Decon	6
Backup Team	2	Squad 1	3
Decon	4	1 ROC	1
Systems Team	6	1 Hazmat	3
ALS	1	<b>Dispatched</b>	<b>29</b>
BLS	1		
Medical Eval	2		
Air Monitoring	3		
<b>Total ERF Needed</b>	<b>26</b>		

## Water Rescue

Water rescue services provided by the department include swift water, rescue diving and body recovery activities. Personnel designated as water rescue technicians are trained in accordance with NFPA 1670 and NFPA 1006. The department currently has 18 certified swift water rescue technicians. The vehicle fleet includes one response pick-up and one boat trailer which hauls one Zodiac boat and one Jet Ski.

Upon receipt of a water rescue type incident, the dispatch center will locate on duty water rescue team members and dispatch those units. The number of water rescue team members needed to handle the incident will be confirmed with the incident commander prior to dispatch of those units. If there are insufficient on-duty team members available, the dispatch center will page all off-duty water rescue team members.

Swift water rescue personnel are assigned to 10 structural firefighting companies throughout the city, which are designated as swift water companies. If a water rescue incident involves a canal or other swift water location, a swift water company will be dispatched to the location to assist the water rescue team members. Table 19 depicts the CTA for a water rescue emergency.

**Table 19**

*Critical Task Analysis for a Water Rescue Emergency*

Critical Task	Personnel Needed	Dispatched Units	Crew
Command	1	1 Battalion	2
Accountability	1	2 Pumpers	6
Safety	1	2 Ambulance	4
Task Force Leader	1	1 Swift Water Co.	3
Entry Team	2	1 Decon	6
Backup Team	2	1 ROC	1
Decon	6	1 Hazmat	3
Downstream Spotter	1	<b>Dispatched</b>	<b>25</b>
Upstream Spotter	1		
ALS	1		
BLS	1		
<b>Total ERF Needed</b>	<b>18</b>		



## Airport Firefighting Services

### *Probability Factors*

Aircraft incidents in the city are rare, and little data exists to analyze. Occasional alerts occur for standby situations. The greatest probability of an aircraft incident lies in the immediate vicinity of the airport, and at the east and west ends of the airport where take offs and landings occur.

### *Community Consequence Factors*

Though the probability of an aircraft emergency is low, the consequence of such an event would likely be high. The last major event occurred in 1998 when an aborted takeoff caused a small commercial airliner to overrun the runway, crossing Airport Road on the west end of the airport and striking several cars.

### *Agency Impact*

The El Paso International Airport is the only site in the jurisdiction with aircraft rescue and firefighting capabilities. It is located in Battalion 3, between Fort Bliss and the east side of town.

### *Classification Methodology*

These incidents are classified according to the El Paso Fire Department Operational Procedures-Airport Operations

### *Critical Task Analysis*

Table 20

Critical Task Analysis for a Low Risk (Alert 1) Aircraft Emergency

Critical Task	Personnel Needed	Dispatched Units	Crew
Station standby	4	ARFF units	4
		1 Rescue	2
<b>Total ERF Needed</b>	<b>4</b>	<b>Dispatched</b>	<b>6</b>

Table 21

Critical Task Analysis for a Medium Risk (Alert 2) Aircraft Emergency

Critical Task	Personnel Needed	Dispatched Units	Crew
Runway Standby	4	ARFF units	4
		1 Rescue	2
<b>Total ERF Needed</b>	<b>4</b>	<b>Dispatched</b>	<b>6</b>

Table 22

Critical Task Analysis for a High Risk (Alert 3) Aircraft Emergency

Critical Task	Personnel Needed	Dispatched Units	Crew
Command	1	ARFF Units	4
Safety	1	1 Rescue	2
Extinguishment	2	<b>Dispatched</b>	<b>6</b>
Rescue Standby	2		
<b>Total ERF Needed</b>	<b>6</b>		

Note- In addition to ARFF specific response above, a primary response of structural units also responds to these alarm types.

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## E. Historical Perspective and Summary of System Performance

### Distribution Factors

**Table 23**

*Demand zone comparison*

Station Demand Zone	Square Miles	% Total Area	Population	% Total Population	Population Density	Housing Units	% Total Housing
1	1.02	0.55%	6,314	0.98%	6190	2,539	1.13%
2	9.85	5.26%	17,093	2.66%	1735	5,657	2.52%
3	0.86	0.46%	6,396	1.00%	7437	2,906	1.29%
5	2.28	1.22%	8,866	1.38%	3889	3,098	1.38%
6	7.97	4.26%	38,541	6.01%	4836	11,945	5.32%
7	2.31	1.23%	13,961	2.18%	6044	5,394	2.40%
8	2.84	1.52%	6,842	1.07%	2409	2,972	1.32%
9	1.07	0.57%	6,163	0.96%	5760	2,002	0.89%
10	0.99	0.53%	5,176	0.81%	5228	2,012	0.90%
11	0.96	0.51%	3,859	0.60%	4020	1,737	0.77%
12	4.25	2.27%	20,740	3.23%	4880	7,733	3.44%
13	4.18	2.23%	19,165	2.99%	4585	6,933	3.09%
14	5.08	2.71%	16,514	2.57%	3251	5,665	2.52%
15	7.83	4.18%	18,185	2.83%	2322	6,332	2.82%
16	6.83	3.65%	30,138	4.70%	4413	10,701	4.77%
17	5.97	3.19%	21,745	3.39%	3642	6,800	3.03%
18	7.02	3.75%	34,438	5.37%	4906	11,628	5.18%
19	5.23	2.79%	28,777	4.49%	5502	11,069	4.93%
20	3.44	1.84%	10,714	1.67%	3115	4,235	1.89%
21	4.77	2.55%	25,478	3.97%	5341	9,128	4.07%
22	7.09	3.79%	29,503	4.60%	4161	12,955	5.77%
23	3.98	2.13%	19,708	3.07%	4952	7,131	3.18%
24	5.23	2.79%	17,721	2.76%	3388	6,776	3.02%
25	10.57	5.65%	40,467	6.31%	3828	13,993	6.23%
26	9.61	5.14%	23,431	3.65%	2438	7,002	3.12%
27	8.01	4.28%	36,711	5.72%	4583	12,613	5.62%
28	13.74	7.34%	16,043	2.50%	1168	5,289	2.36%
29	5.6	2.99%	29,297	4.57%	5232	9,536	4.25%
30	10.4	5.56%	13,709	2.14%	1318	5,075	2.26%
31	4.61	2.46%	9,665	1.51%	2097	4,657	2.07%
33	3.81	2.04%	30,581	4.77%	8027	8,933	3.98%
34	9.48	5.07%	6,954	1.08%	734	2,423	1.08%
35	3.2	1.71%	4,152	0.65%	1298	1,223	0.54%
37	7.06	3.77%	24,540	3.82%	3476	6,442	2.87%

## Drive Time from Stations

A GIS drive time analysis was conducted to determine areas in the city that can be reached from a fire station in four minutes or less. The model uses all roads that can be driven in the given time period, based on speed limits, one way streets, and other programmed factors. Time ranges from one to ten minutes were indicated city wide, as shown in Figure 7.

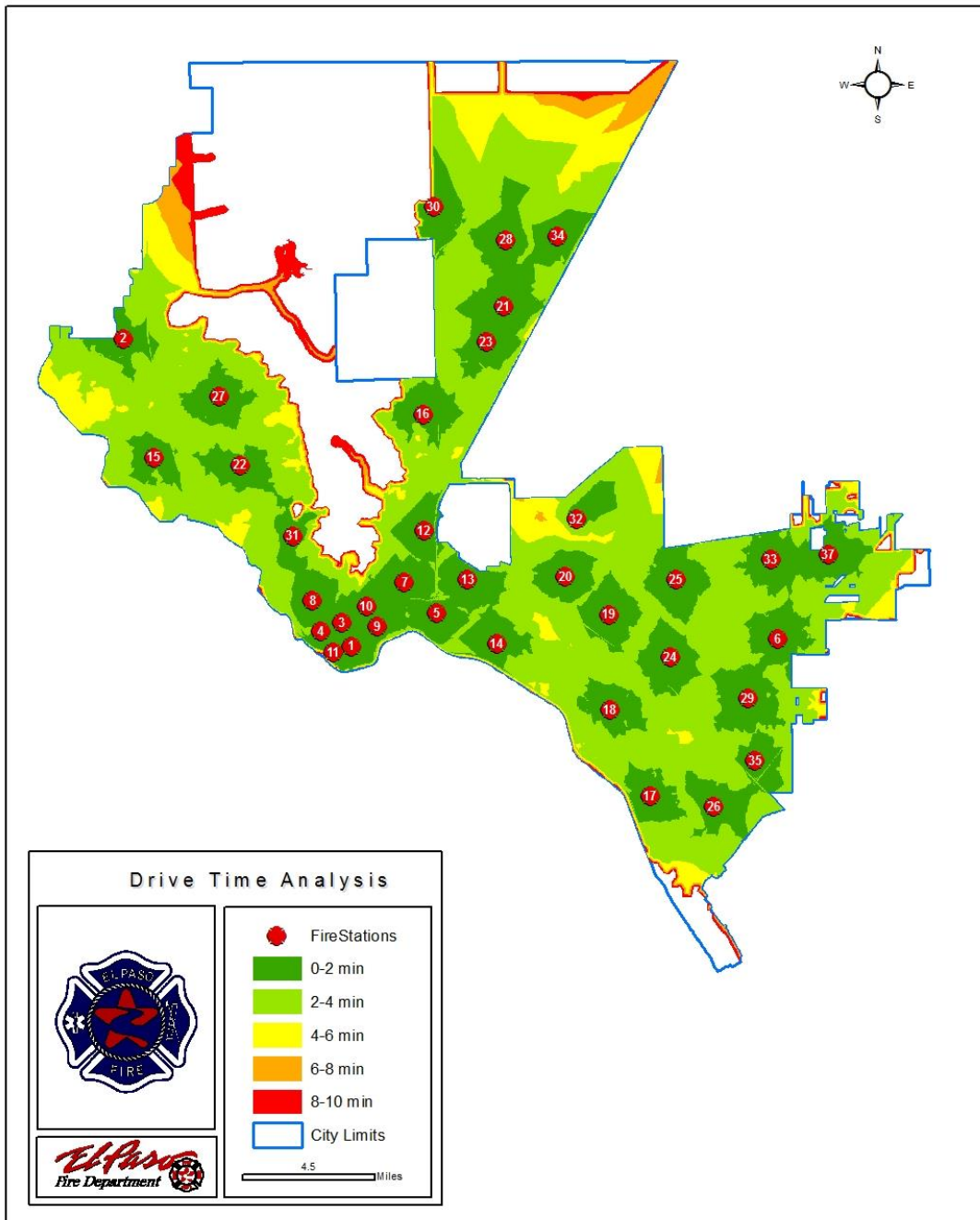


Figure 7. Drive Time Analysis

## Concentration Factors

### Battalion Area Characteristics

Management of the department's operational resources occurs at the battalion level, where each battalion chief maintains responsibility for the readiness and accountability of their area's resources. The battalion chief also responds to incidents for command and control of incidents, generally at responses to hazards at the medium or higher risk level. Since concentration level responses are organized around these battalion areas, it is relevant to compare the factors of each battalion territory

**Table 24**

*Battalion Territories*

Battalion Territories							
Battalion	Area - Sq Miles	% Total	Roadway Miles	% Total	Population	Population Density (Pop/ Sq. Mile)	Roadway Miles / Square Mile
1	10.93	4.26%	225.1	8.41%	60798	5562.49	20.59
2	76.49	29.84%	543.46	20.32%	134683	1760.79	7.10
3	28.23	11.01%	357.15	13.35%	85897	3042.76	12.65
4	31.64	12.34%	533.35	19.94%	166429	5260.08	16.85
5	72.86	28.43%	487.17	18.21%	119805	1644.32	6.69
6	36.16	14.11%	528.83	19.77%	124777	3450.69	14.62
Total	256.32	100.00%	2675.06	100.00%	692389*	2701.27	10.43 (All Battalions)

\* Because the census tracts overlap battalion boundaries, the sum of the battalion populations is not reflective of the total population of the city, as stated in the beginning of this document.

### Incident Study Characteristics

In considering the availability of resources in the concentration areas, a study of incidents was done by demand zone. Incident density, the number of incidents per square mile, was used to provide an accurate comparison to these areas that vary greatly in size. In this analysis it is important to note that the demand zone territory may have many units deployed in them, and that the busiest first due is not necessarily the busiest individual company. The incident density was previously analyzed by fire district. In order to align to actual dispatch patterns, the methodology is being changed to assess the density and incident counts within the station demand zone areas. The map and counts found in the previous edition of the Standards of Cover document were removed from this update, and new versions will be added to the next revision when the change to the new methodology is completed.

## **Baseline Performance Tables**

Baseline performance tables are shown in Tables 26 to 29. Appendix S: FY 2014 Percent of Responses Meeting Benchmarks by Fire Districts for percent of responses meeting benchmarks by fire district. Appendix T: FY 2014 Percent of Responses Handled by First Due Units for percent of responses meeting benchmarks by first due companies and fire district. Baseline performance was measured from incident data compiled in the department's Fire Records system. Appendix V depicts Fire Risk Summary by Pumper First Due Territory.

## **Fire Suppression Services**

In the study period for Fire incidents, call processing times are around three minutes and fifty seconds. Turnout times are at around one minute and fifty-nine seconds. Total response time, for the first unit on scene, is ten minutes and seventeen seconds 90% of the time for the study period. The 90<sup>th</sup> percentile total response times for the medium ERF of 16 firefighters on the scene is seventeen minutes and twenty-six seconds (See Table 26).

## **Emergency Medical Services**

For emergency medical incidents, call processing times are three minutes and fifty-seven seconds. Turnout times are at around one minute and fifty-two seconds. First unit total response times were slightly better than for fire calls at ten minutes and sixteen seconds. Medium hazard level ERF for medical calls is achieved with the arrival of the first ALS capable unit. The study period shows a total response ERF of seventeen minutes and thirty-one seconds (See Table 27).

## **Hazardous Materials Services**

First unit total response times for HazMat incidents during the study period were eleven minutes and twenty-nine seconds. Most HazMat incidents are of low risks and do not require full HazMat specialty team participation. Where the risk level increase for these types of incident the response times take a significant upward turn. Total response times at medium to high risk range from forty six minutes and twenty-nine seconds up to one hour and twenty-four minutes and thirty-five seconds respectively (See Table 28).

## **Rescue Services**

For rescue services incidents, call processing times are four minutes and thirty-five seconds. First on scene travel times during the study period is seven minutes and thirty-five seconds ninety percent of the time. Total response time for the first unit on the scene is twelve minutes and thirty-eight seconds. As the department considers all technical rescue incidents to be high risk, total response ERF times are very high for this call type, at one hour thirty-two minutes and fifty-two seconds. These incidents often require very specialized resources which often take longer to assemble (See Table 29).

## **Aircraft Rescue and Fire Fighting (ARFF) Services**

There are no baseline service level performance statements provided for the effective response force in this report.

The department's capabilities through an examination of annual test results for the past four years of the Federal Aviation Administration (FAA) mandates and the associated documentation serves as prima facie evidence the requirements are being met and is contained as an exhibit in the department's self-assessment manual.

# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

**Table 25**

*Medium and High Risk Structure Fires Baseline Performance*

<b>Medium and High Risk Structure Fires - 90th Percentile Times - Baseline Performance</b>			<b>Bench mark</b>	<b>2010- 2014</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>	<b>2010</b>
<b>Call Processing</b>	Pick-up to Dispatch	Call Taker	:30	2:14	1:01	1:00	2:30	3:10	NA
		Metro-Urban	:30	1:36	:27	:46	1:35	2:56	2:31
		Suburban		1:47	:20	:28	1:32	5:17	3:36
		Rural		NA	NA	NA	NA	NA	NA
<b>Turnout Time</b>	Turnout Time 1st Unit	Metro-Urban	1:20	1:59	2:10	2:05	1:50	2:00	1:53
		Suburban		2:01	2:14	1:59	1:54	1:51	2:07
		Rural		2:16	2:10	2:50	1:17	1:42	2:23
<b>Travel Time</b>	Travel Time 1st Unit <b>Distribution</b>	Metro-Urban	4:00	5:47	6:00	5:47	5:31	5:51	5:38
		Suburban	5:00	8:53	8:30	9:25	7:37	8:32	12:39
		Rural	10:00	12:12	9:27	NA	NA	NA	NA
	Travel Time Initial Attack Force <b>Distribution</b>	Metro-Urban	5:00	6:11	5:58	6:18	6:28	6:19	5:57
		Suburban	6:00	9:03	7:35	10:08	9:03	10:28	9:40
		Rural	11:00	NA	NA	NA	NA	NA	NA
	<b>NFPA 1710</b> Travel Time Medium Risk ERF <b>Concentration</b>	Metro-Urban	8:00	11:12	10:32	10:38	11:19	11:16	11:05
		Suburban	10:00	15:23	17:04	15:54	15:23	19:16	14:55
		Rural	12:00	NA	NA	NA	NA	NA	NA
	Travel Time Medium Risk ERF <b>Concentration</b>	Metro-Urban	10:00	13:09	11:45	12:53	12:56	13:55	11:51
		Suburban	12:00	17:14	17:23	14:29	17:17	13:56	19:33
		Rural	14:00	NA	NA	NA	NA	NA	NA
	Travel Time High Risk ERF <b>Concentration</b>	Metro-Urban	12:00	16:25	16:25	17:47	17:12	14:31	17:11
		Suburban	14:00	NA	NA	NA	NA	NA	NA
		Rural	16:00	NA	NA	NA	NA	NA	NA
<b>Total Response Time</b>	Total Response Time 1st Unit On Scene <b>Distribution</b>	Metro-Urban	6:20	10:17	8:31	8:49	10:01	13:12	8:15
		Suburban	7:20	13:34	11:43	12:56	11:50	14:48	17:16
		Rural	10:20	22:10	14:25	NA	NA	NA	NA
	Total Response Time Initial Attack Force <b>Distribution</b>	Metro-Urban	7:20	12:04	10:35	11:19	11:51	15:04	10:07
		Suburban	8:20	14:24	10:31	13:16	15:49	17:36	12:51
		Rural	11:20	NA	NA	NA	NA	NA	NA
	<b>NFPA 1710</b> Total Response Time Medium Risk ERF <b>Concentration</b>	Metro-Urban	10:20	17:26	14:45	16:49	17:03	22:32	14:19
		Suburban	12:20	23:20	20:05	19:39	20:58	55:09	25:13
		Rural	14:20	NA	NA	NA	NA	NA	NA
	Total Response Time Medium Risk ERF <b>Concentration</b>	Metro-Urban	12:20	20:39	17:42	18:56	19:38	26:40	26:25
		Suburban	14:20	23:25	20:25	18:52	23:35	19:36	28:15
		Rural	16:20	NA	NA	NA	NA	NA	NA
	Total Response Time High Risk ERF <b>Concentration</b>	Metro-Urban	14:20	36:54	44:32	48:44	31:20	44:40	27:56
		Suburban	16:20	NA	NA	NA	NA	NA	NA
		Rural	18:20	NA	NA	NA	NA	NA	NA



# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

**Table 26**

*Medium and High Risk Medical*

<b>Medium and High Risk Medical Incidents - 90th Percentile Times - Baseline Performance</b>			<b>Bench mark</b>	<b>2010- 2014</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>	<b>2010</b>
<b>Call Processing</b>	Pick-up to Dispatch	Call Taker	1:00	2:14	1:01	1:00	2:30	3:10	NA
		Metro-Urban	:30	1:43	:28	:27	1:11	2:24	2:08
		Suburban		1:40	:29	:27	1:12	2:26	2:06
		Rural		1:44	:31	:34	1:27	2:35	2:18
<b>Turnout Time</b>	Turnout Time	Metro-Urban	1:00	1:52	2:04	1:58	1:49	1:50	1:42
		Suburban		1:54	1:57	1:58	1:52	1:55	1:44
	1st Unit	Rural		1:55	2:03	2:03	1:52	1:49	1:45
<b>Travel Time</b>	Travel Time 1st Unit <b>Distribution</b>	Metro-Urban	4:00	6:00	6:04	6:02	6:16	6:12	5:29
		Suburban	5:00	7:38	7:20	7:56	7:58	8:07	7:13
		Rural	10:00	8:43	8:05	9:31	9:05	9:08	7:46
	Travel Time Medium Risk ERF <b>Concentration</b>	Metro-Urban	8:00	8:37	7:46	8:02	9:56	9:08	8:56
		Suburban	10:00	10:11	9:11	9:50	10:49	10:44	10:39
		Rural	12:00	10:42	9:45	10:24	11:24	11:39	11:17
	Travel Time High Risk ERF <b>Concentration</b>	Metro-Urban	12:00	11:41	13:55	10:46	14:55	10:52	11:42
		Suburban	14:00	20:36	22:22	NA	10:22	18:00	NA
		Rural	16:00	13:04	NA	14:47	9:42	13:50	NA
<b>Total Response Time</b>	Total Response Time 1st Unit On Scene <b>Distribution</b>	Metro-Urban	6:00	10:16	8:45	8:52	10:43	12:18	9:08
		Suburban	7:00	11:55	10:03	10:50	12:25	14:22	11:11
		Rural	12:00	13:08	10:51	12:33	13:30	15:27	10:22
	Total Response Time Medium Risk ERF <b>Concentration</b>	Metro-Urban	10:00	17:31	14:53	16:43	22:53	21:19	12:50
		Suburban	12:00	19:04	15:43	18:17	24:55	24:06	13:42
		Rural	14:00	22:59	18:24	22:03	27:57	28:07	14:50
	Total Response Time High Risk ERF <b>Concentration</b>	Metro-Urban	14:00	38:57	33:55	39:11	80:10	31:47	35:06
		Suburban	16:00	56:42	57:38	NA	37:53	39:37	NA
		Rural	18:00	47:06	NA	1:59:40	23:40	47:52	NA

# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

**Table 27**

*Medium and High Risk Hazmat*

<b>Medium/ High Risk Hazmat Incidents - 90th Percentile Times - Baseline Performance</b>			<b>Bench mark</b>	<b>2010- 2014</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>	<b>2010</b>
<b>Call Processing</b>	Pick-up to Dispatch	Call Taker	1:00	2:14	1:01	1:00	2:30	3:10	NA
		Metro-Urban	:30	2:02	:45	:48	1:36	2:53	2:24
		Suburban		2:00	1:09	:52	1:51	2:04	2:15
		Rural		1:59	:26	:46	1:59	3:16	NA
<b>Turnout Time</b>	Turnout Time 1st Unit	Metro-Urban	1:20	1:54	1:55	2:03	1:47	1:49	1:41
		Suburban		2:15	2:34	2:13	2:06	2:02	2:00
		Rural		1:50	1:53	2:11	1:35	2:35	NA
<b>Travel Time</b>	Travel Time 1st Unit <b>Distribution</b>	Metro-Urban	4:00	7:07	6:56	6:52	7:03	7:00	7:14
		Suburban	5:00	9:22	9:00	10:48	11:48	8:22	8:43
		Rural	10:00	9:58	9:19	10:10	6:57	10:25	NA
	Travel Time Medium ERF <b>Concentration</b>	Metro-Urban	20:00	14:12	14:17	12:22	14:12	11:56	17:35
		Suburban	22:00	24:45	NA	17:31	24:45	16:57	18:04
		Rural	26:00	NA	NA	22:34	NA	NA	NA
	Travel Time High ERF <b>Concentration</b>	Metro-Urban	25:00	56:24	47:05	56:24	NA	15:08	9:15
		Suburban	29:00	NA	NA	NA	NA	NA	10:57
		Rural	34:00	NA	NA	NA	NA	NA	NA
<b>Total Response Time</b>	Total Response Time 1st Unit On Scene <b>Distribution</b>	Metro-Urban	6:20	11:29	9:41	9:38	11:34	13:43	9:50
		Suburban	7:20	13:27	11:46	12:55	14:39	14:22	10:37
		Rural	10:20	13:50	11:57	14:30	11:25	17:47	12:29
	Total Response Time Medium ERF <b>Concentration</b>	Metro-Urban	22:20	46:29	43:04	50:38	87:41	33:53	44:29
		Suburban	24:20	1:41:17	56:51	32:33	126:55	50:08	23:11
		Rural	28:20	NA	NA	NA	NA	NA	NA
	Total Response Time High ERF <b>Concentration</b>	Metro-Urban	27:20	1:24:35	1:23:27	1:14:42	NA	155:42	78:39
		Suburban	31:20	NA	NA	NA	NA	NA	29:32
		Rural	36:20	NA	NA	NA	NA	NA	NA

# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

**Table 28**

*Medium and High Risk Tech*

<b>Medium / High Risk Technical Rescue Incidents</b> - <b>90th Percentile Times - Baseline Performance</b>			<b>Bench mark</b>	<b>2010- 2014</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>	<b>2010</b>
<b>Call Processing</b>	Pick-up to Dispatch	Call Taker	1:00	2:14	1:01	1:00	2:30	3:10	NA
		Metro-Urban	:30	2:21	:36	:27	1:15	3:36	3:02
		Suburban		3:29	4:04	:35	1:51	4:41	2:30
		Rural		2:32	:22	:36	NA	3:59	2:24
<b>Turnout Time</b>	Turnout Time 1st Unit	Metro-Urban	1:20	2:20	2:59	2:44	2:18	2:04	2:19
		Suburban		2:56	2:07	2:17	2:03	3:43	6:39
		Rural		2:25	1:23	1:20	NA	1:43	3:42
<b>Travel Time</b>	Travel Time 1st Unit <b>Distribution</b>	Metro-Urban	4:00	7:35	7:31	8:28	7:40	7:09	6:17
		Suburban	5:00	11:55	NA	8:06	10:27	8:33	12:40
		Rural	10:00	8:43	NA	8:43	NA	13:36	7:50
	Travel Time High ERF <b>Concentration</b>	Metro-Urban	25:00	1:12:06	12:13	1:12:06	62:14	27:04	14:29
		Suburban	29:00	31:34	NA	NA	NA	31:34	19:43
		Rural	34:00	29:05	NA	NA	NA	10:15	29:05
<b>Total Response Time</b>	Total Response Time 1st Unit On Scene <b>Distribution</b>	Metro-Urban	6:20	12:38	9:52	11:33	11:42	14:43	11:08
		Suburban	7:20	17:21	NA	11:22	14:53	15:19	16:04
		Rural	10:20	10:15	NA	10:39	NA	19:48	10:00
	Total Response Time High ERF <b>Concentration</b>	Metro-Urban	27:20	1:32:52	1:02:02	NA	92:52	59:34	40:18
		Suburban	31:20	1:15:43	NA	NA	NA	74:34	55:50
		Rural	36:20	38:40	NA	NA	NA	26:01	38:40

\* All technical rescues are considered high risk by the fire department

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## **Station Demand Zone Reliability Factors**

System reliability was examined for each station demand zone (SDZ). Availability is based on the percent of incidents within a station demand zone that a unit from the first due station was actually first on the scene.

System performance was based on the percent of the incidents in which the first arriving unit responded in 4 minutes or less travel time. This was also evaluated at a simulated 100% availability by counting only incidents to which the first due company responded, and a 0% reliability with only incidents to which the first due did not respond. Current capacity is calculated based on performance within the station demand zone and represents the maximum expected output.

Table 30 depicts the first due reliability analysis. Demand met within the SDZ is representative of the difference between the call volume and the current capacity within the SDZ. Percentage of demand met within performance measure is that portion of total demand that was serviced within the performance benchmark. Ultimately, the El Paso Fire Department seeks to meet demand within the performance benchmark ninety (90) percent of the time.

# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

**Table 29**

*Station Demand Zone Reliability Analysis*

4 Minute Travel Time Reliability Study					
Station	Total Calls in SDZ	90% of Calls for Service	Projected Capacity within performance measure	(+/-) Projected Capacity Met within Performance Measure	(+/-) % Projected Capacity Met within Performance
1	2968	2671	2475	(196)	-7%
2	1363	1227	443	(783)	-64%
3	1296	1166	1022	(144)	-12%
5	2261	2035	1437	(598)	-29%
6	2464	2218	1181	(1036)	-47%
7	1859	1673	1528	(145)	-9%
8	1413	1272	934	(337)	-27%
9	1286	1157	1041	(117)	-10%
10	1707	1536	1263	(273)	-18%
11	1868	1681	1460	(221)	-13%
12	2454	2209	1654	(554)	-25%
13	2407	2166	1403	(764)	-35%
14	2151	1936	1377	(559)	-29%
15	2034	1831	814	(1016)	-56%
16	3823	3441	2194	(1247)	-36%
17	3005	2705	1716	(988)	-37%
18	3680	3312	1868	(1444)	-44%
19	2752	2477	1552	(925)	-37%
20	2697	2427	1371	(1056)	-44%
21	2698	2428	1703	(725)	-30%
22	2790	2511	1408	(1103)	-44%
23	2716	2444	1834	(610)	-25%
24	2900	2610	1876	(734)	-28%
25	2951	2656	1767	(889)	-33%
26	2066	1859	831	(1029)	-55%
27	1881	1693	659	(1033)	-61%
28	1444	1300	1005	(294)	-23%
29	2540	2286	1302	(984)	-43%
30	985	887	447	(440)	-50%
31	1043	939	458	(481)	-51%
33	1228	1105	584	(521)	-47%
34	578	520	286	(235)	-45%
35	361	325	109	(216)	-66%
37	1509	1358	533	(826)	-61%

# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

**Table 30** First Arriving Station by Station Demand Zone

Station	Demand Zone																																		
	1	2	3	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	33	34	35	37	
1	2368	1	68	22		1	25	123	18	172	4	4	4		1				5	1	1	1	1				1	1				3			1
2		1041									1			160							8						72					1			
3	44		847	2		13	72	4	230	25	3	1	1					1	2		2			1							3			1	
4	12		93	1			95	3	19	110		1		1						2		2				1					1				
5	6		2	1741		35	1	105	9	6	11	208	130		1	1	1	5	28	1							1								
6					1630			1								1	1	1					15	16					236		26	3	122		
7	1		3	78		1517		105	126	1	355	116	2	7	7			4		4		4											2		
8	7		139			1	723		4	4				4							9										25				
9	377		8	65		10		898	46	5	4	2	4	2	2						1						2								
10	6		64	5		35	2	35	1121	2	11	5		1	1				1		1	1							1		1				
11	116		47	3			97	5	1	1480		1																			1				
12	1	1	1	7		153	1	4	7		1818	80	3	391					1	3		9								1					
13				34		18		2	1		11	1603	76	6				7	148					1											
14	4		1	168		1		1				121	1648				41	10	21			1	1	1						1					
15		73					2							1462							214						44				6				
16						5			2		96	3	1	2883					1	22		195						1		2		1			
17	1			1									4			2541	215	2					4	1	247				8			1			
18	1			4	2								230		1	100	3060	84	9		1		136		15				2						
19				1		1						3	10			1	108	1843	110				108	194							1	1			
20				2		1	1	2				105	13			1	6	372	1925				1	77	1							1			
21						1	2		1		5			43					2050	1	533							231		63	1	104			
22	3	7	1	1			11		1	2	1			286						2216						181					233				
23	1		1	2							3	1		414					255		1890						18		12		3				
24					22							2				3	197	247	7				2211	264	27				157		2		1		
25	1		1		164								1				2	72	23				154	2231					3		98		3		
26					2											315	15	3	1				6	1553					21			26	1		
27		84					1							78						123						1556					2				
28										2	1		1		5				118			37					1024		254		37				
29					212											7	1	2					152	4	114				1861		3	28	12		
30		1									2				12				133		11							112		635		2			
31	4	4	5				331			1				24					1		78	1	1				8					703			
33				1	282	1	1					1			2			5	1	1			5	142						9		645	1	291	
34															2				42		17							22		4		427			
35															2		12	1	2	1			8		69				172		1	237	3		
37	2					104	1												1					10	1			4		38	1	1074			

# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

## System Performance by Station

**Table 31**

FY 2014 90th Percentile Incident Performance by Station

Station	Dispatcher (Alarm to Dispatch)	Turnout (Dispatch to Enroute)	Within SDZ			City Wide		
			Travel (Enroute to Scene)	Response (Dispatch to Scene)	Total Response (Alarm to Scene)	Travel (Enroute to Scene)	Response (Dispatch to Scene)	Total Response (Alarm to Scene)
1	01:01	01:56	04:36	06:01	06:36	04:54	06:15	06:51
2	00:57	01:47	07:11	08:12	08:57	07:34	08:55	09:27
3	00:57	02:07	04:40	06:16	06:46	05:31	06:55	07:32
4	01:56	02:02	NA*	NA*	NA*	06:26	07:58	08:39
5	01:08	02:15	05:19	06:44	07:14	06:01	07:23	07:50
6	00:51	01:46	06:15	07:29	07:52	06:48	07:56	08:23
7	00:57	01:52	04:35	05:51	06:12	05:38	06:54	07:23
8	00:36	02:10	06:05	07:40	08:27	06:31	08:21	08:48
9	00:36	02:11	04:42	06:13	06:34	05:05	06:33	07:00
10	00:30	02:16	04:50	06:30	06:49	05:01	06:40	07:01
11	01:00	02:06	04:46	06:22	06:45	05:13	06:41	07:09
12	00:56	02:00	05:23	06:30	07:04	05:51	07:07	07:41
13	00:35	01:51	06:10	07:20	07:51	06:59	08:10	08:34
14	00:51	02:02	05:38	07:06	07:30	06:00	07:19	07:54
15	00:48	01:49	06:52	08:04	08:33	07:07	08:18	08:52
16	01:10	01:51	05:44	07:05	07:39	06:08	07:29	08:01
17	00:58	02:03	05:57	07:15	07:44	06:25	07:40	08:12
18	01:01	02:04	06:04	07:30	08:02	06:33	07:58	08:23
19	00:54	01:53	05:41	06:54	07:28	06:15	07:29	08:04
20	01:08	02:09	06:11	07:43	08:17	06:42	08:13	08:43
21	00:48	01:53	05:24	06:34	07:00	05:47	07:01	07:29
22	01:16	02:06	06:29	07:46	08:24	06:59	08:17	08:56
23	00:58	01:56	05:19	06:28	06:56	05:52	07:01	07:32
24	01:08	02:02	05:27	06:44	07:16	06:16	07:30	08:05
25	00:49	02:08	05:36	06:58	07:29	06:11	07:32	07:59
26	01:02	02:00	07:23	08:45	09:14	07:31	08:52	09:29
27	00:49	01:56	06:39	08:01	08:25	07:13	08:32	09:02
28	01:01	02:08	05:23	06:49	07:20	06:36	08:01	08:31
29	00:50	01:59	05:59	07:16	07:40	06:43	07:56	08:19
30	00:36	01:44	05:48	07:01	07:25	06:29	07:51	08:14
31	01:01	01:52	06:28	07:50	08:15	07:09	08:27	08:54
33	01:04	02:17	06:17	07:55	08:20	07:18	08:55	09:24
34	00:42	01:59	06:53	08:21	08:43	07:19	08:49	09:13
35	00:45	01:50	07:10	08:45	09:11	08:20	09:39	10:07
37	00:58	01:58	06:51	08:17	08:43	06:59	08:24	08:53

\* Station 4 does not have an SDZ since it also does not have a first due suppression unit

## Comparability Factors

### Comparison to Accredited Fire Agencies

Deployment data was obtained from Charlotte Fire Department, Virginia and Portland Fire and Rescue, Oregon. El Paso Fire department used these similar agencies, which are accredited, as a comparison. Table 32 depicts the comparison between these two fire agencies with the El Paso Fire Department regarding number of stations, department size, population served, area served, total responses, 90% travel time for 2013, and staffing per fire unit.

**Table 32**

*Department Comparison*

Agency	Number of Stations	Department Size	Population Served	Area Served (sq. mi)	Total Responses (2010)	90% Travel Time Fire	90% Travel Time Medical	Staffing Per Unit
Charlotte Fire Department	41	1,164	726,284	299.2	93,139	5:11	5:30	4
Portland Fire and Rescue	30	755	563,916	151.6	67,000	7:10	6:18	4
El Paso Fire Department	36	844	602,672	260	88,508	5:47	6:02	3



## F. Performance Objectives and Measurement

Performance objectives for the EPFD were developed using the appropriate standard, NFPA 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Department, 2010 edition, NFPA 1221: Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems, as well as recommendations made by the Center for Public Center Excellence in the CFAI: Standards of Cover, 5<sup>rd</sup> Ed., and the CFAI: Fire & Emergency Service Self-Assessment Manual, 8<sup>th</sup> Ed. ARFF operations are dictated by Federal Aviation Administration (FAA) regulations, Airport Certifications in 14 CFR Part 139.

Measures are set for call processing time, turnout time, travel time and total response time.

### Performance Objectives – Benchmarks

#### All Programs

##### Call processing performance objective

For fire incident types in all population categories, the first alarm will be dispatched within *one minute* or less call processing time *ninety percent* of the time. For all other incident types in all population categories, the first alarm will be dispatched within *one and a half minutes* or less call processing time *ninety percent* of the time. Call processing includes Call Handling time (from acknowledgement of call to event being created) and Call Dispatching time (from creation of event to notification of responding units)

##### Turnout time performance objective

For all incident types, except emergency medical, in all population categories, the turnout time for all responding units will be *one minute and twenty seconds* or less *ninety percent* of the time. For all emergency medical incidents in all population categories, the turnout time for all responding units will be *one minute* or less *ninety percent* of the time.

#### Fire Suppression Services

##### Distribution performance objectives for *fire incidents*

Distribution performance objectives refer to the efficiency of the first structural unit (pumper, ladder, quint, rescue, or battalion) arriving on the scene of a fire incident. This unit will establish initial fire ground operations, which may consist of command, safety, water supply, rescue, or other critical tasks as the unit's ability and the situation warrants. These operations shall keep in alignment with the department's policy on 2-in 2-out. As distribution is concerned primarily with getting the first unit on the scene quickly to begin initial fire ground operations, and not to completely mitigate the incident, the level of risk is not a consideration in this objective.

For all fire responses in **metropolitan** or **urban** areas, the first arriving unit of the initial alarm with at least 3 firefighters shall arrive within *six minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to establish initial fire ground operations.

For all fire responses in **suburban** areas, the first arriving unit of the initial alarm with at least 3 firefighters shall arrive within *seven minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to establish initial fire ground operations.

For all fire responses in **rural** areas, the first arriving unit of the initial alarm with at least 3 firefighters shall arrive within *ten minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to establish initial fire ground operations.

### **Initial Attack Force (IAF) performance objectives for fire incidents**

The initial attack force is the arrival of sufficient units on the scene to be able to begin interior firefighting operations, according to the department's policies on 2-in 2-out. This IAF shall include the personnel of the first in company, and any additional companies needed to complete the balance of the personnel, generally being the second unit on the scene. As the IAF is concerned primarily with getting enough personnel on scene to allow interior operations, and not to completely mitigate the incident, the level of risk is not a consideration in this objective.

For all fire responses in **metropolitan** or **urban** areas, an initial attack force of at least 4 firefighters on scene shall arrive within *seven minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to establish interior firefighting operations with a rapid intervention crew on scene.

For all fire responses in **suburban** areas, an initial attack force of at least 4 total firefighters on scene shall arrive within *eight minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to establish interior firefighting operations with a rapid intervention crew on scene.

For all fire responses in **rural** areas, an initial attack force of at least 4 total firefighters on scene shall arrive within *eleven minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to establish interior firefighting operations with a rapid intervention crew on scene.

### **Concentration performance objectives**

Concentration performance objectives refer to the total number of resources needed on the scene to effectively and efficiently mitigate the incident. It includes the companies that arrived in the concentration and effective response force objectives and any tasks that may have been handled in by those companies. Since the risk category of the incident will determine the effective response force needed to do this, established in the critical task analysis of this document, the performance objectives will vary accordingly. Low risk fires are single responses, and will be covered under the performance objectives for concentration.

### **Concentration performance objectives for medium risk fire incidents**

For all medium risk fire responses in **metropolitan** or **urban** areas, an effective response force of 19 total firefighters on scene with a minimum 2- 1500 GPM pumpers and 1 aerial, all with full complement of equipment, shall assemble within *ten minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to implement command, safety, accountability, fire attack, utilities/ventilation, forcible entry/search and rescue, backup lines, RIC, and atmospheric monitoring.

For all medium risk fire responses in **suburban** areas, an effective response force of 19 total firefighters on scene with a minimum 2- 1500 GPM pumpers and 1 aerial, all with full complement of equipment, shall assemble within *twelve minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to implement command, safety, accountability, fire attack, utilities/ventilation, forcible entry/search and rescue, backup lines, RIC, and atmospheric monitoring.

## COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

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For all medium risk fire responses in **rural** areas, an effective response force of 19 total firefighters on scene with a minimum 2- 1500 GPM pumpers and 1 aerial, all with full complement of equipment, shall assemble within *fourteen minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to implement command, safety, accountability, fire attack, utilities/ventilation, forcible entry/search and rescue, backup lines, RIC, and atmospheric monitoring.

### **Concentration performance objectives for high risk fire incidents**

For all high risk fire responses in **metropolitan** or **urban** areas, an effective response force of 25 total firefighters on scene with a minimum 3- 1500 GPM pumpers and 1 aerial, all with full complement of equipment, shall assemble within *fourteen minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to implement command, safety, accountability, fire attack, utilities/ventilation, forcible entry/search and rescue, backup lines, RIC, atmospheric monitoring and division supervision.

For all high risk fire responses in **suburban** areas, an effective response force of 25 total firefighters on scene with a minimum 3- 1500 GPM pumpers and 1 aerial, all with full complement of equipment, shall assemble within *sixteen minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to implement command, safety, accountability, fire attack, utilities/ventilation, forcible entry/search and rescue, backup lines, RIC, atmospheric monitoring and division supervision.

For all high risk fire responses in **rural** areas, an effective response force of 25 total firefighters on scene with a minimum 3- 1500 GPM pumpers and 1 aerial, all with full complement of equipment, shall assemble within *eighteen minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to implement command, safety, accountability, fire attack, utilities/ventilation, forcible entry/search and rescue, backup lines, RIC, atmospheric monitoring and division supervision.

## **Emergency Medical Services**

### **Distribution performance objectives for emergency medical incidents**

For all emergency medical responses in **metropolitan** or **urban** areas, the first unit with at least 2 firefighters and BLS capability and equipment shall arrive within *six minutes* or less total response time *ninety percent* of the time and be able to establish command, initial patient care and stabilization.

For all emergency medical responses in **suburban** areas, the first unit with at least 2 firefighters and BLS capability and equipment shall arrive within *seven minutes* or less total response time *ninety percent* of the time and be able to establish command, initial patient care and stabilization.

For all emergency medical responses in **rural** areas, the first unit with at least of 2 firefighters and BLS capability and equipment shall arrive within *twelve minutes* or less total response time *ninety percent* of the time and be able to establish command, initial patient care and stabilization.

### **Concentration performance objectives for medium risk emergency medical incidents**

For all medium risk emergency medical responses in **metropolitan** or **urban** areas, an effective response force of at minimum 1 ALS capable unit on scene shall arrive on the scene within *ten*

*minutes* or less total response time *ninety percent* of the time and be able to implement command and ALS care.

For all medium risk emergency medical responses in **suburban** areas, an effective response force of at minimum 1 ALS capable unit on scene shall arrive on the scene within *twelve minutes* or less total response time *ninety percent* of the time and be able to implement command and ALS care.

For all medium risk emergency medical responses in **rural** areas, an effective response force of at minimum 1 ALS capable unit on scene shall arrive on the scene within *fourteen minutes* or less total response time *ninety percent* of the time and be able to implement command and ALS care.

### **Concentration performance objectives for high risk *emergency medical incidents***

For all high risk emergency medical responses in **metropolitan** or **urban** areas, an effective response force of 17 total firefighters, including at least one unit with ALS capability and equipment shall arrive on the scene within *fourteen minutes* or less total response time *ninety percent* of the time and be able to implement command, safety, triage, ALS/BLS care operations and transport officer.

For all high risk emergency medical responses in **suburban** areas, an effective response force of 17 total firefighters on scene, including at least one unit with ALS capability and equipment, shall arrive on the scene within *sixteen minutes* or less total response time *ninety percent* of the time and be able to implement command, safety, triage, ALS/BLS care operations and transport officer.

For all high risk emergency medical responses in **rural** areas, an effective response force of 17 total firefighters on scene, including at least one unit with ALS capability and equipment, shall arrive on the scene within *eighteen minutes* or less total response time *ninety percent* of the time and be able to implement command, safety, triage, ALS/BLS care operations and transport officer.

### **Hazardous Materials Services**

The hazardous materials service objectives apply to incidents in which the services of the hazmat task force (either the entry team or a decon team) are needed to mitigate the incident.

### **Distribution performance objectives for *hazardous materials (hazmat) incidents***

For all hazmat responses in **metropolitan** or **urban** areas the first unit with at least 2 firefighters shall arrive within *six minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to establish incident command, assessment, and initial containment and isolation operations.

For all hazmat responses in **suburban** areas the first unit with at least 2 firefighters shall arrive within *seven minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to establish incident command, assessment, and initial containment and isolation operations.

For all hazmat responses in **rural** areas the first unit with at least 2 firefighters shall arrive within *ten minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to establish initial incident command, assessment, and initial containment and isolation operations.

### **Concentration performance objectives for medium risk *hazardous materials (hazmat) incidents***

For all medium risk hazmat responses in **metropolitan** or **urban** areas, an effective response force of 19 total firefighters on scene, shall assemble within *twenty two minutes and twenty seconds* or less

total response time *ninety percent* of the time and be able to implement command, safety, accountability, water supply, mitigation, decon, rehab, and air monitoring.

For all medium risk hazmat responses in **suburban** areas, an effective response force of 19 total firefighters on scene, shall assemble within *twenty four minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to implement command, safety, accountability, water supply, mitigation, decon, rehab, and air monitoring.

For all medium risk hazmat responses in **rural** areas, an effective response force of 19 total firefighters on scene, shall assemble within *twenty eight minutes and twenty seconds* total response time *ninety percent* of the time and be able to implement command, safety, accountability, water supply, mitigation, decon, rehab, and air monitoring.

### **Concentration performance objectives for high risk *hazardous materials (hazmat)* incidents**

For all high risk hazmat responses in **metropolitan** or **urban** areas, an effective response force of 36 total firefighters on scene including assembly of the hazmat task force and decon team, with associated apparatus and equipment, and additional resources needed for area evacuation, shall assemble within *twenty seven minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to implement command, safety, accountability, water supply, air monitoring, rehab, task force leader, entry team officer, entry team, entry team support, back up team, back up team support, decon team, medical evaluation, research, mitigation support and decon support.

For all high risk hazmat responses in **suburban** areas, an effective response force of 36 total firefighters on scene including assembly of the hazmat task force and decon team, with associated apparatus and equipment, and additional resources needed for area evacuation, shall assemble within *thirty one minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to implement command, safety, accountability, water supply, air monitoring, rehab, task force leader, entry team officer, entry team, entry team support, back up team, back up team support, decon team, medical evaluation, research, mitigation support and decon support.

For all high risk hazmat responses in **rural** areas, an effective response force of 36 total firefighters on scene, including assembly of the hazmat task force and decon team, with associated apparatus and equipment, and additional resources needed for area evacuation, shall assemble within *thirty six minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to implement command, safety, accountability, water supply, air monitoring, rehab, task force leader, entry team officer, entry team, entry team support, back up team, back up team support, decon team, medical evaluation, research, mitigation support and decon support.

### **Technical Rescue Services**

The El Paso Fire Department recognizes all technical rescue service to be categorized as high risk and these service objectives apply strictly to confined space, rope, trench, and water rescue incidents in which the services of specialized teams are needed to mitigate the incident. Such teams have training and equipment beyond that of a typical firefighting company and include Special Rescue 11 for confined space, rope, and trench rescue and the water rescue team for water emergencies. Incidents that can be handled without the assistance of these specialized teams will generally be held to the emergency medical performance objective.

### **Distribution performance objectives for high risk *technical rescue incidents***

For all technical rescue responses in **metropolitan** or **urban** areas, the first unit with at least 2 firefighters shall arrive within *six minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to establish incident command and safety.

For all technical rescue responses in **suburban** areas, the first unit with at least 2 firefighters shall arrive within *seven minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to establish incident command and safety.

For all technical rescue responses in **rural** areas, the first unit with at least 2 firefighters shall arrive within *ten minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to establish incident command and safety.

### **Concentration performance objectives for high risk *technical rescue incidents***

For all high risk technical rescue responses in **metropolitan** or **urban** areas, an effective response force of 15 total firefighters, including the appropriate specialized rescue team, shall assemble within *twenty seven minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to implement command, accountability, decon (when needed), safety, entry team officer, task force leader, entry team, backup team, systems team, ALS/BLS, medical evaluation, and air monitoring.

For all high risk technical rescue responses in **suburban** areas, an effective response force of 15 total firefighters on scene, including the appropriate specialized rescue team, the remainder of the effective response force shall assemble *within thirty one minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to implement command, accountability, decon (when needed), safety, entry team officer, task force leader, entry team, backup team, systems team, ALS/BLS, medical evaluation, and air monitoring.

For all high risk technical rescue responses in **rural** areas, an effective response force of 15 total firefighters on scene, including the appropriate specialized rescue team, the remainder of the effective response force shall assemble within *thirty six minutes and twenty seconds* or less total response time *ninety percent* of the time and be able to implement command, accountability, decon (when needed), safety, entry team officer, task force leader, entry team, backup team, systems team, ALS/BLS, medical evaluation, and air monitoring.

# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

**Table 33**

*Benchmark Objectives for Metro or Urban Population Categories*

Measured at the 90 <sup>th</sup> Percentile		Fire Incidents	Medical Incidents	Hazmat Incidents	Tech Rescue Incidents
<b>Call Processing</b>	Pick-up to Dispatch	01:00	01:30	01:30	01:30
<b>Turnout</b>	Turnout Time 1st In	01:20	01:00	01:20	01:20
<b>Travel</b>	Travel Time 1st In	04:00	04:00	04:00	04:00
	Travel Time IAF	5:00	NA	NA	NA
	Travel Time Medium ERF	08:00	08:00	20:00	NA
	Travel Time for High ERF	12:00	12:00	25:00	25:00
<b>Total Response Time</b>	Total Response Time 1st In	06:20	06:30	6:50	6:50
	Total Response Time IAF	7:20	NA	NA	NA
	Total Response Time Medium ERF	10:20	10:30	22:50	NA
	Total Response Time High ERF	14:20	14:30	27:50	27:50

**Table 34**

*Benchmark Objectives for Suburban Population Categories*

Measured at the 90 <sup>th</sup> Percentile		Fire Incidents	Medical Incidents	Hazmat Incidents	Tech Rescue Incidents
<b>Call Processing</b>	Pick-up to Dispatch	01:00	01:30	01:30	01:30
<b>Turnout</b>	Turnout Time 1st In	01:20	01:00	01:20	01:20
<b>Travel</b>	Travel Time 1st In	05:00	05:00	05:00	05:00
	Travel Time IAF	6:00	NA	NA	NA
	Travel Time Medium ERF	10:00	10:00	22:00	NA
	Travel Time for High ERF	14:00	14:00	29:00	29:00
<b>Total Response Time</b>	Total Response Time 1st In	07:20	07:30	07:50	07:50
	Total Response Time IAF	8:20	NA	NA	NA
	Total Response Time Medium ERF	12:20	12:30	24:50	NA
	Total Response Time High ERF	16:20	16:30	31:50	31:50

# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

**Table 35**

*Benchmark Objectives for Rural Population Categories*

Measured at the 90 <sup>th</sup> Percentile		Fire Incidents	Medical Incidents	Hazmat Incidents	Tech Rescue Incidents
<b>Call Processing</b>	Pick-up to Dispatch	01:00	01:30	01:30	01:30
<b>Turnout</b>	Turnout Time 1st In	01:20	01:00	01:20	01:20
<b>Travel</b>	Travel Time 1st In	10:00	10:00	10:00	10:00
	Travel Time IAF	11:00	NA	NA	NA
	Travel Time Medium ERF	12:00	12:00	26:00	NA
	Travel Time High ERF	16:00	16:00	34:00	34:00
<b>Total Response Time</b>	Total Response Time 1st In	10:20	10:30	10:50	10:50
	Total Response Time IAF	11:20	NA	NA	NA
	Total Response Time Medium ERF	14:20	14:30	28:50	NA
	Total Response Time High ERF	18:20	18:30	28:50	36:50

## Aircraft Rescue and Fire Fighting (ARFF) Services

The aircraft rescue and firefighting service objectives are to meet FAA requirements.

**Table 36**

*Benchmark Objectives for ARFF Services*

<b>ARFF Units</b>	<b>First Arriving Unit</b>	<b>Full Effective Response Force</b>
	<b>3 Minutes/100 Percent</b> Within three minutes from the time of the alarm, at least one required (indexed) aircraft rescue and firefighting vehicle must reach the midpoint of the farthest runway serving air carrier aircraft from its assigned post or reach any other specified point of comparable distance on the movement area that is available to air carriers, and begin application of extinguishing agent.	<b>4 Minutes/90 Percent</b> Within four minutes from the time of alarm, all other required (indexed) vehicles must reach the point from their assigned posts and begin application of an extinguishing agent.
		<b>8 Minutes/90 Percent</b> Travel time to an in-flight emergency for off-site resources.



### **G. Compliance Methodology**

To ensure the agency is meeting current service level objectives, continuous monitoring of service level baselines must be conducted in a regular basis. The compliance team is composed of department program managers in conjunction with Operations Research Division. An SOC manager was appointed from the Operations Research division who will oversee the compliance process.

The compliance team begins the review process each March 1<sup>st</sup> by conducting a revised community risk assessment, including the response demands within each zone and the identified risks within. Changes in community demographics and growth over the previous twelve month period are reviewed. The team determines if there have been any changes within planning zones, changes to service demands, or changes in standards or operations that impact the service level objectives or the Standard of Cover document.

Beginning in June the team reviews service level baselines and system performance. Included in the review are a summary of the results of the service level objectives, a comparison of current results to previous results and calculations of the difference in results between time periods. To aid in the collection and presentation of this information, the Compliance Team works as a group to assemble all required information and assist the Department administration in the interpretation of data and considerations for improvement towards achieving benchmarks objectives. The report is presented to the department administration by the August Departmental staff meeting. The revised SOC document is present to and adopted by city council in September in preparation for the Strategic Plan rewrite. The service level objectives are incorporated for fire and other emergencies, in self-assessment manual revision each February. Findings of the self-assessment review are translated, where needed, into budgetary requests for the coming fiscal year budget preparation. The standards of cover maintenance cycle and review process are shown in Figures 9 and 10.

An appraisal is conducted quarterly each budget year as part of performance measures analyzed by the City's Office of Management and Budget in order to determine the effectiveness of the El Paso Fire Department's fire suppression program, public education program, technical rescue program, hazardous materials program, emergency medical service program, and aviation firefighting program. The service level objectives for fire aim towards improving first responder response time to 4:00 minutes. Appraisals of programs are also conducted quarterly each budget year as part of performance measures in conjunction with the Urban Task Force in order to measure its efforts in risk reduction. Evaluations are focused on statistical data that identify risk behaviors that are prevalent in our community and to develop programs that can effectively reach the at-risk audience.

An appraisal of the El Paso Fire Department's fire suppression program utilize comparisons of performance measures between first responder time, total number of responses, and percent of fires contained to the room of origin. Evaluations to determine the effectiveness of the department's public education program occur through statistical analysis reports from the Fire Prevention Division. Performance measures for the Special Operations Division, which include all technical rescue disciplines, compare first responder time to technical rescue incidents as well as total number of responses. Evaluations also include training records which are reviewed for proper documentation and contact hours, and hazardous trend analysis during incidents. El Paso Fire Department's hazardous materials program, like its technical rescue program, is also reviewed quarterly to determine its effectiveness regarding performance measures. An appraisal is conducted

quarterly in order to determine the effectiveness of the emergency medical service program. The goal of first responder response time of 4:00 minutes with Basic Life Support care to all medical emergencies is required. An annual appraisal of the department's Aviation Rescue and Fire Fighting program is conducted by an FAA administrator to determine the effectiveness of the program. Performance measures of this program include unannounced inspections, training record reviews and timed simulations to determine if El Paso's ARFF personnel can complete the tasks safely and efficiently.

## EPFD Continuous Improvement Cycle

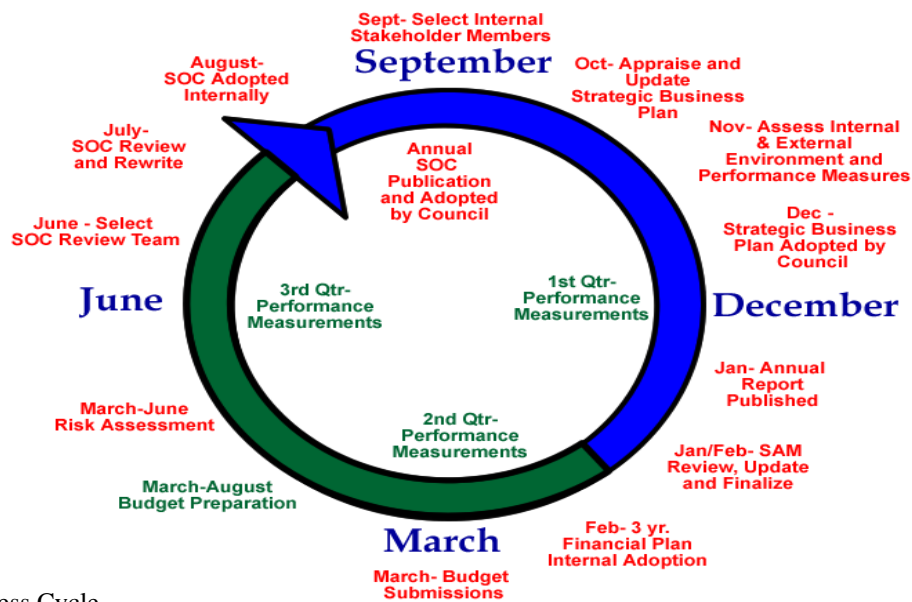


Figure 8. EPFD Business Cycle

## Standards of Cover Review Process

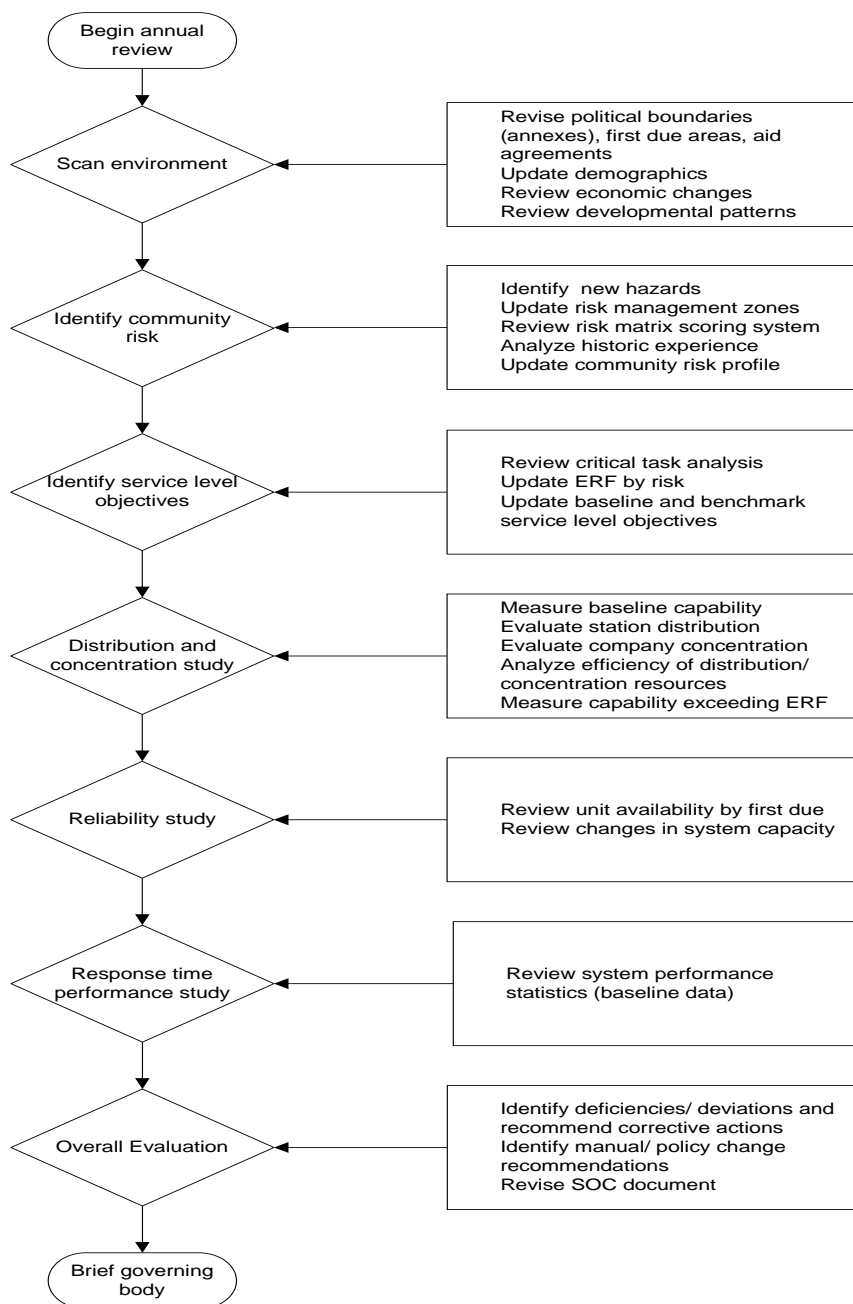


Figure 9. SOC Review Process

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## H. Overall Evaluation and Conclusion Recommendations

### Evaluation Methodology and Determinations

#### **Evaluation Methodology**

Once all SOC analysis and studies were completed, an overall system wide evaluation was conducted to identify system effectiveness in accomplishing outcomes identified in the department strategic plan. This was first accomplished by conducting a SWOT analysis (strengths, weaknesses, opportunities, and threats).

The evaluation of system performance completed in the SOC process was used to determine the system's strengths and weaknesses. Performance gaps were identified as issues with possible solutions; the combination of a performance issue with a proposed solution is referred to in this document as a specific scenario. Scenarios were identified with the sole purpose to improve system efficiency and effectiveness.

Additionally opportunities and threats were analyzed to identify external forces for which the department has limited control. Again scenarios were developed to address system threats.

Once all scenarios have been identified, a four step review is conducted on each to determine its feasibility:

- 1) Technical review – What are the changes to the system and what are the probable results? How will it be accomplished?
- 2) Operational review – Is the scenario safe, and will it work in the field with available resources? What will the impact be to overall operations?
- 3) Fiscal review – Is the benefit worth the cost, and is it sustainable? What will the overall financial impact be to the department and the city?
- 4) Policy review – Does the scenario fit within the mission and values of the department? Will there be any negative community impact or reaction, and if so is the benefit worth it?

Based on this analysis, the scenarios that have the greatest likelihood for effective and efficient positive change will be presented as recommendations in a final report.

#### **Evaluation Determinations**

The drive time analysis, using GIS, was conducted to determine areas in the city that can be reached from a fire station in four minutes or less. It was determined that service gaps, drive time more than four minutes, were located in the west, central, and east sections of the city. The gap in the west section of the city was addressed with the construction of Fire Station 31. The gap in the central part of the city, which is in Fire Station 14's territory, is due to the presence of several industries which security and ease of access from public streets causes delays. The opening of Fire Station 37 addressed the gap in the east section of the city.

## **Reliability – Planning Areas Performance Determinations**

El Paso Fire Department has established baselines and benchmarks for ongoing performance evaluations. The agency's established baseline and benchmark travel time objectives for fire response have provided a clear indication on where the department stands in comparison to industry best practices for first due effective response force (EFR). EPFD has fallen short in meeting the prescribed benchmark travel time objectives for this performance indicator for all service types in the metro/urban, suburban, and rural categories. These benchmarks were made to reflect recommendations made by the CPSE in the Fire and Emergency Services Self-Assessment Manual, 8<sup>th</sup> ed., and NFPA 1710.

## **Conclusions**

The department is an organization of committed personnel working with modern and well maintained apparatus and equipment. It offers advanced life support and specialized fire and rescue services to the citizens of El Paso. It has a dedicated fire training academy, good labor/ management relations, and an overall positive public image. The department has achieved an ISO public protection classification (PPC) rating of 1/10. The 10 component of the classification is due to undeveloped areas further than five road miles from the nearest fire station. There aren't any occupancies effected by this portion of the classification. Out of over 48,000 ISO rated communities in the United States, only 57 have achieved a PPC of 1. The department has thorough documentation of standard operating procedures, and a standardized discipline process.

Though the overall culture of the department is improving, there remain weaknesses in internal communications and attitude. System total response time performance is higher than industry standards and the benchmarks adopted in this document.

## **Recommendations**

The intent of the analyses conducted in the standards of cover process was to effect real and positive change to the department and its ability to more effectively and efficiently accomplish its mission. To this end, the following recommendations are made:

- Deployment:
  1. The differential between baseline performance and benchmark objectives set in this document will necessitate the department to identify all possible contributing factors and adjust accordingly.
  2. Investigate strategies to increase resource availability within demand zones.
  3. Address compliance with unit status updates with training and SOPs.
- Risk assessment:
  1. The need to include cross-border risks needs to be analyzed. Ciudad Juarez, Mexico is a major metropolitan city that can pose many risks to the citizens of El Paso. Information needs to be collected about these risks and included in future risk assessments.
  2. Target hazard data needs to be collected from the company level to include in the risk assessment. This data needs to be made more readily available and easily accessible to dispatch and line personnel.
- Performance measurement:

1. Turn-out times have been trending upward throughout the evaluation period. The cause of this trend should be identified and a plan developed to overcome this trend.
2. Reliability analysis has identified areas of needed improvement. It is recommend that the five lowest performing demands zones be evaluated and seek to improve on at least one of these zones annually.

These recommendations should be considered in the 2015 departmental strategic planning session and, as appropriate, incorporated into the goals of that plan.

### **Executive Conclusion**

The department is an organization of committed personnel working with modern and well maintained apparatus and equipment. It provides a full range of emergency and life safety services, has a dedicated fire training academy, good labor/ management relations, and an overall positive public image. Additionally, the department has been able to achieve an ISO public protection classification (PPC) rating of 1, the best available.

Despite the forgoing, the department is committed to a process of continuous improvement and has engaged the Center for Public Safety Excellence to help it embed this policy in its culture. The standards of cover developed herein are an effort to quantify current performance and establish concrete levels for future improvement. These standards will be evaluated continually and will be updated each year as indicated in the SOC. Moreover, as previously indicated, the SOC will be a permanent part of the department's budget development and community-driven strategic planning processes.

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## J. Glossary

**Aerial-** A fire suppression apparatus that carries a complement of ground ladders and a mechanically operated ladder, 65 – 105 feet in length

**Alert 1-** Minor aircraft emergency.

**Alert 2-** Major aircraft emergency, an aircraft with an operational defect that affects normal flight operations to the extent that there is danger of an accident.

**Alert 3-** An aircraft accident has occurred.

**ANI/ALI** - automatic number identification / automatic location identification

**Battalion-** A fire suppression unit without water, pump or ladder capabilities, staffed with at least two structurally firefighting certified, personnel; responds to multi-unit incidents as an incident command vehicle

**Call Processing Time** – Elapsed time from when the call is received to when the unit is dispatched

**Call Handling Time** – Elapsed time from when the call is received to when an event is created

**Call Dispatch Time** – Elapsed time from when an event is created to when the unit is dispatched

**Condition I** - Some smoke, fire or hazardous condition visible, not of a serious nature.

**Condition II** - Smoke, fire or hazardous condition of a serious nature that is not under control, but may be handled by an initial response assignment. Additionally, HM1 and SQ1 will be dispatched to all Condition II and greater fires.

**Condition III** - Smoke, fire or a hazardous condition of a serious nature that is not under control, but may be handled by a full response assignment. Transmittal of a condition III will automatically upgrade a primary response to a full response, if not already upgraded. This upgrade in response will include two additional battalions, one pumper, one aerial, and one ambulance.

**Condition IV** - Smoke, fire or a hazardous condition of a serious nature that is not under control and may require additional companies. Transmittal of a condition IV will automatically upgrade a primary response to a full response. Additionally, 601 shall be dispatched and assigned to the incident and the next-due line shall be dispatched to Level II staging. Only three battalion units shall automatically be dispatched to any incident (Communications will notify the next due companies to stage).

**Critical tasks** – Tasks to be completed on the emergency scene to bring the emergency incident under control.

**Demand zone-** Planning areas used for performance comparison for accreditation analysis, based on the first due pumper territories at each station.

**Double Response-** A double response shall be dispatched to an incident that is similar to a single response but may require a specialized unit/equipment or Battalion unit

**Effective Response Force (ERF)** - The number of personnel/tasks necessary to complete all of the identified critical tasks within the prescribed timeframe.

**Event Processing Time** – Elapsed time from when the ANI/ALI data is verified to when the unit is dispatched; generally within seconds of the call processing time

**Fire District-** A geographic area, within the response jurisdiction, for determining fire unit response

**First Due Territory-** A geographical area assigned to a given unit; normally in the immediate vicinity of the station where the unit is housed

**First-Responder-** A fire suppression apparatus, without transport capabilities, that responds to a medical emergency along with an ambulance

**Full Response-** A full response shall be dispatched to a significant incident that requires resources or equipment beyond the capabilities of a primary response, for example condition 3 or 4 type incidents. At a minimum, 4 pumpers, 2 aerials, 2 ambulances (1 rescue unit) and 1 Battalion unit.

**Hazard** – a dangerous condition with the potential to cause harm to people and property and may require emergency mitigation and management; hazards assessed in this standards of cover document are fires, medical emergencies, hazardous materials emergencies, special rescue scenarios, and aircraft emergencies

**Haz-Mat Condition I** - No hazardous condition visible or occurring

**Haz-Mat Condition II** - Limited emergency condition which can be controlled by the first responding agencies. The incident is confined to a small area, and does not require evacuation of other than the involved structure or the immediate outdoor area. This incident will not require the use of specialized chemical protective clothing.

**Haz-Mat Condition III** - Emergency condition involving a greater hazard or larger area which poses a potential threat to life or property and may require a limited evacuation or protection in place of the surrounding area. Specialized chemical protective clothing may be required.

**Haz-Mat Condition IV** - Emergency condition involving a severe hazard or large area which poses an extreme threat to life and property and will probably require a large scale evacuation. Specialized chemical protective clothing may be required.

**Initial Attack Force** – The number of personnel necessary to safely initiate internal fire attack operations in a structure fire. The El Paso Fire Department maintains a two-in, two-out rule, where for the initial entry of two personnel to occur there needs to be two personnel outside the structure to act as a rapid intervention crew should the interior crew need assistance.

**Ladder-** A fire suppression apparatus with no pump or water capability but with a complement of ladders and a mechanically operated ladder, 65-105

**Light Rescue-** An ambulance unit staffed with any combination of EMT-P and or EMT-B, with only one of the personnel having structural firefighting certification

**Medic-** An ambulance unit staffed with any combination of EMT-P and/or EMT-B, without structural firefighter certification

**Medical Lieutenant** – An equivalent rank to Fire Lieutenant, but is normally restricted to commanding an ambulance crew.

**Multiple Alarm-** A multiple alarm is an alarm where additional assignments of companies are dispatched to the same location as a previous full response. A second and each subsequent alarm assignment will include an additional 3 pumpers and 1 aerial.

**Population category-** The classification of areas of the city of El Paso based on population density. The categories are metropolitan, urban, suburban, rural, and wilderness.

**Primary Response-** A primary response shall be dispatched to an incident that would require resources or equipment beyond that of a double response, for example a report of a structure fire. At a minimum, 3 pumpers, 2 aerials, 1 rescue unit, and 1 Battalion unit.

**Pumper-** A fire suppression apparatus with pump and water capabilities and minimal ground ladders (may also be known as an Engine)

**Quint-** A fire suppression apparatus with both ladder capabilities and pumper capabilities; unit can respond as a ladder or a pumper

**Rescue-** An ambulance unit staffed by at least one EMT-Paramedic and an EMT-Basic; all assigned personnel will have structural firefighting certification

**Response Time** – Elapsed time from when the unit is dispatched to when it arrives on the scene; a sum of the turnout time and the travel time

**Risk** – The level of exposure to a hazard; the probability of loss to people or property from a hazard

**Risk Categories** – Delineations of risk into low, medium, high, or special, based on the probability of the hazard occurring, resources needed to mitigate the hazard (agency impact), and community consequence

**Risk Management Zone-** A specific geographic area, within a fire district, with an identified hazard classification – low, medium, high or special

**Run-card-** As a backup to the GIS based dispatch system used by the El Paso County 911 District, run cards determine the order of units to dispatch in the event of an emergency.

**Service type** – Type of emergency service provided. For the standard of cover document, the service types analyzed are fire, emergency medical, hazardous materials, technical rescue, and airport rescues and firefighting (ARFF) incidents.

**Single Response-** A single response shall be dispatched to an incident that is minor and may be handled by one company

**Total Response Time** - Elapsed time from when the call is received to when the unit arrives on the scene; a sum of the call processing time and the response time

**Travel Time** – Elapsed time from when the unit begins to respond to when it arrives on the scene

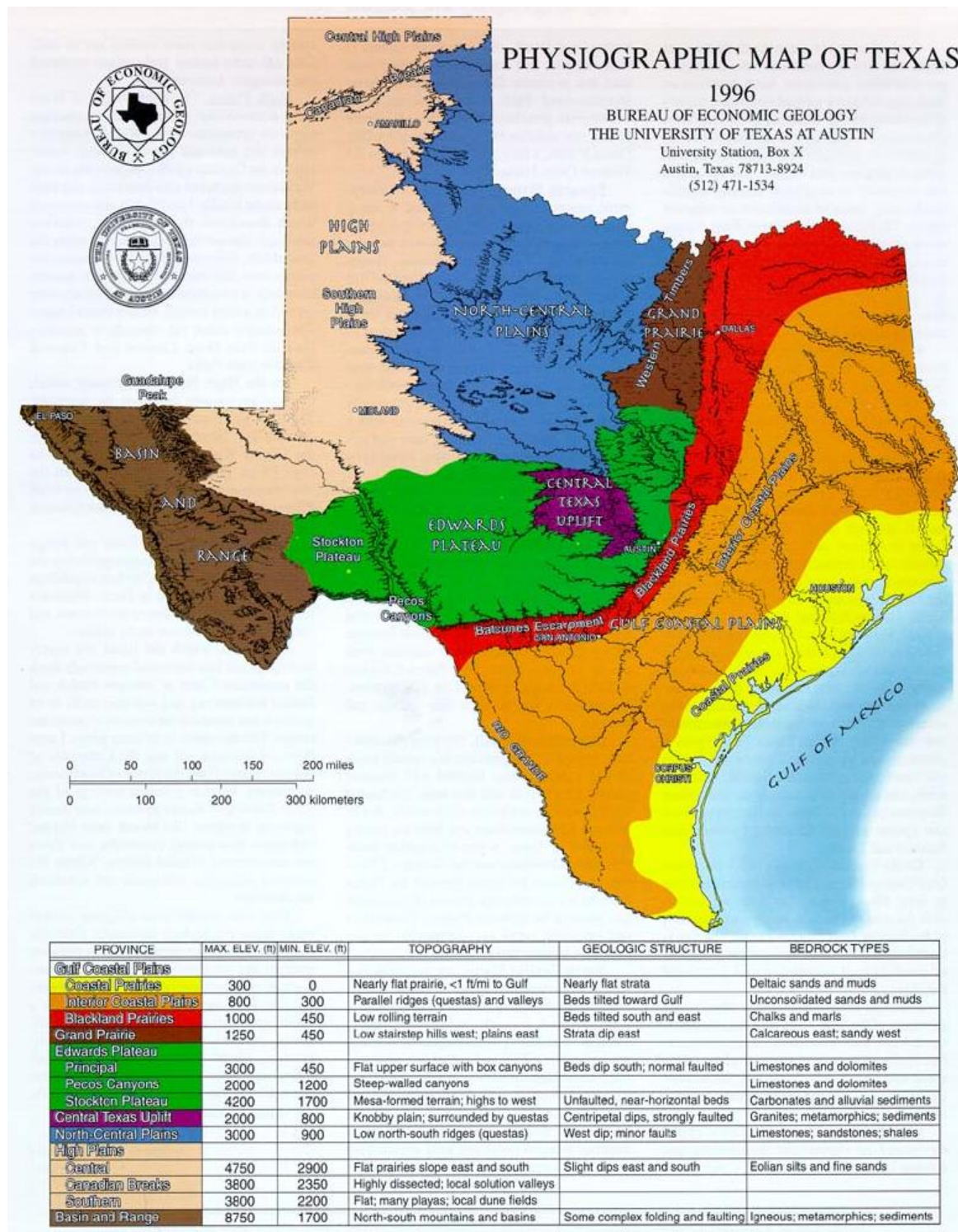
**Turnout Time** – Elapsed time from when the unit is dispatched to when it begins to respond

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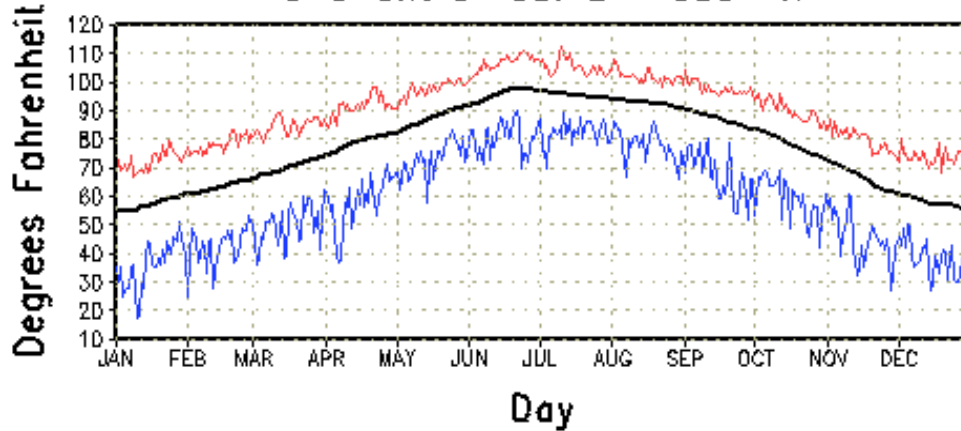
## K. Appendices

### Appendix A: Physiographic Map of Texas

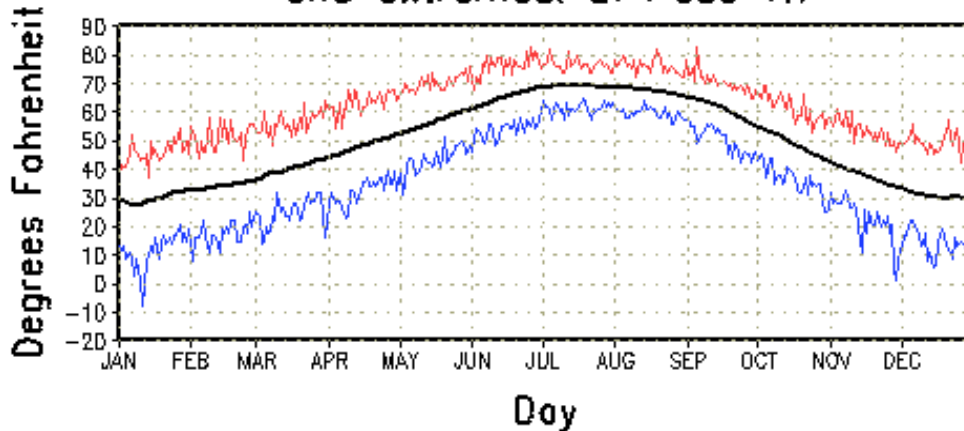


## Appendix B: El Paso Climate

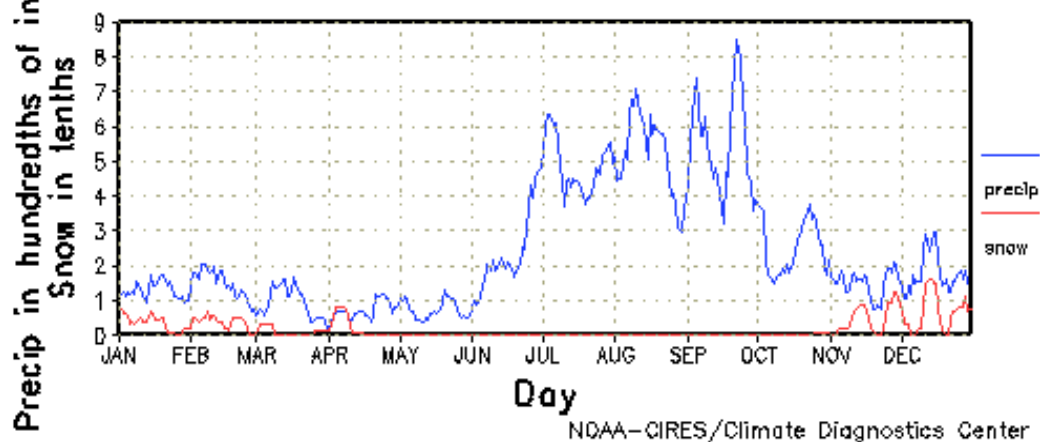
### Daily mean maximum temperature and extremes: El Paso TX



### Daily mean minimum temperature and extremes: El Paso TX



### Daily mean precipitation and snowfall: El Paso TX

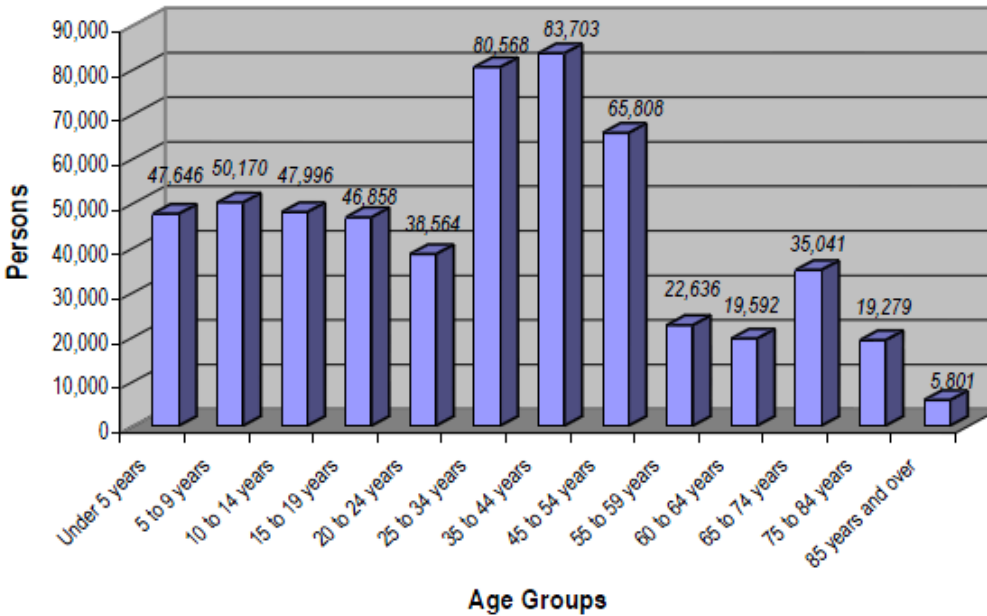


NOAA-CIRES/Climate Diagnostics Center

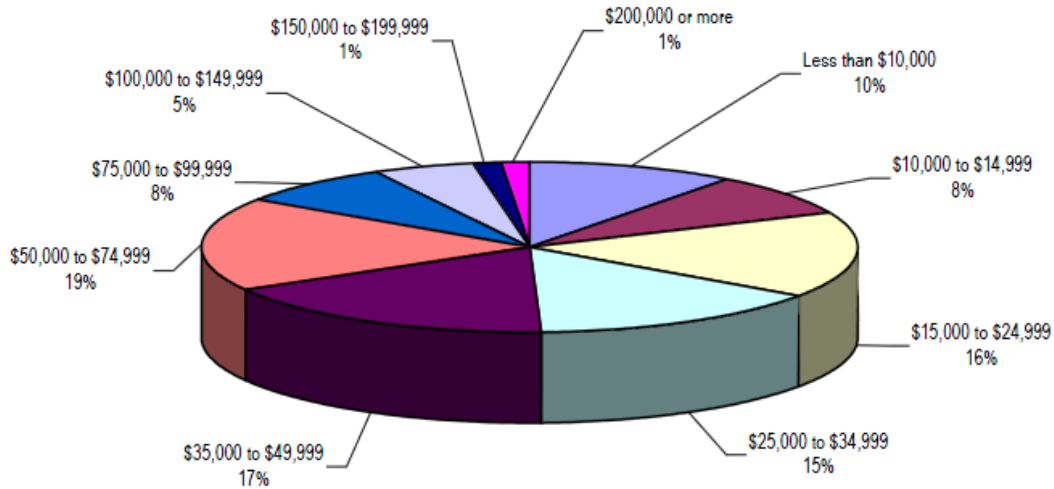
# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

## Appendix C: 2010 Census Demographic Data

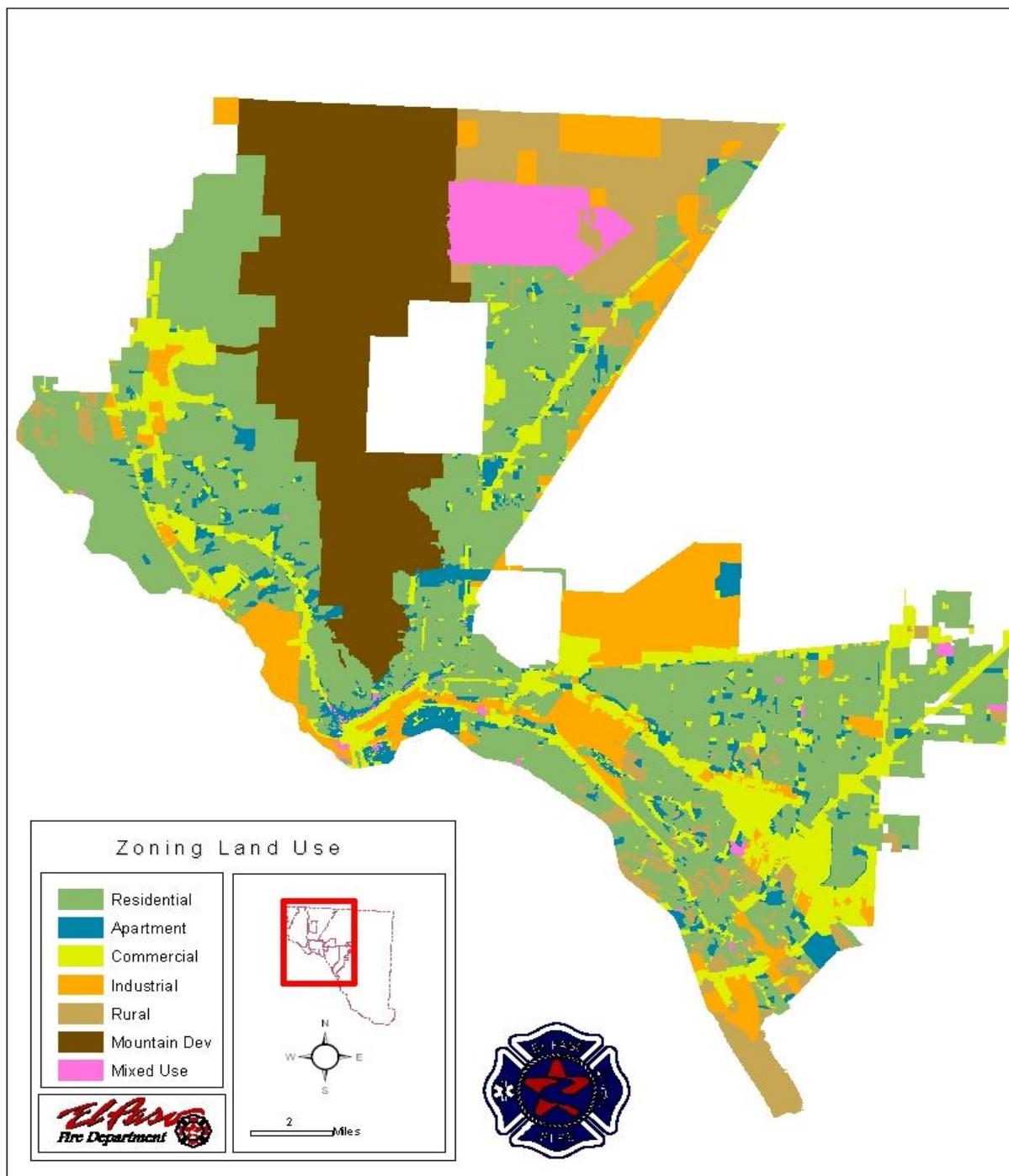
City of El Paso: Population by Age  
U.S. Census 2010 Data  
Planning, Research and Development



City of El Paso: Family Income  
U.S. Census 2010 Data  
Median Family Income = \$35,432  
Planning, Research and Development

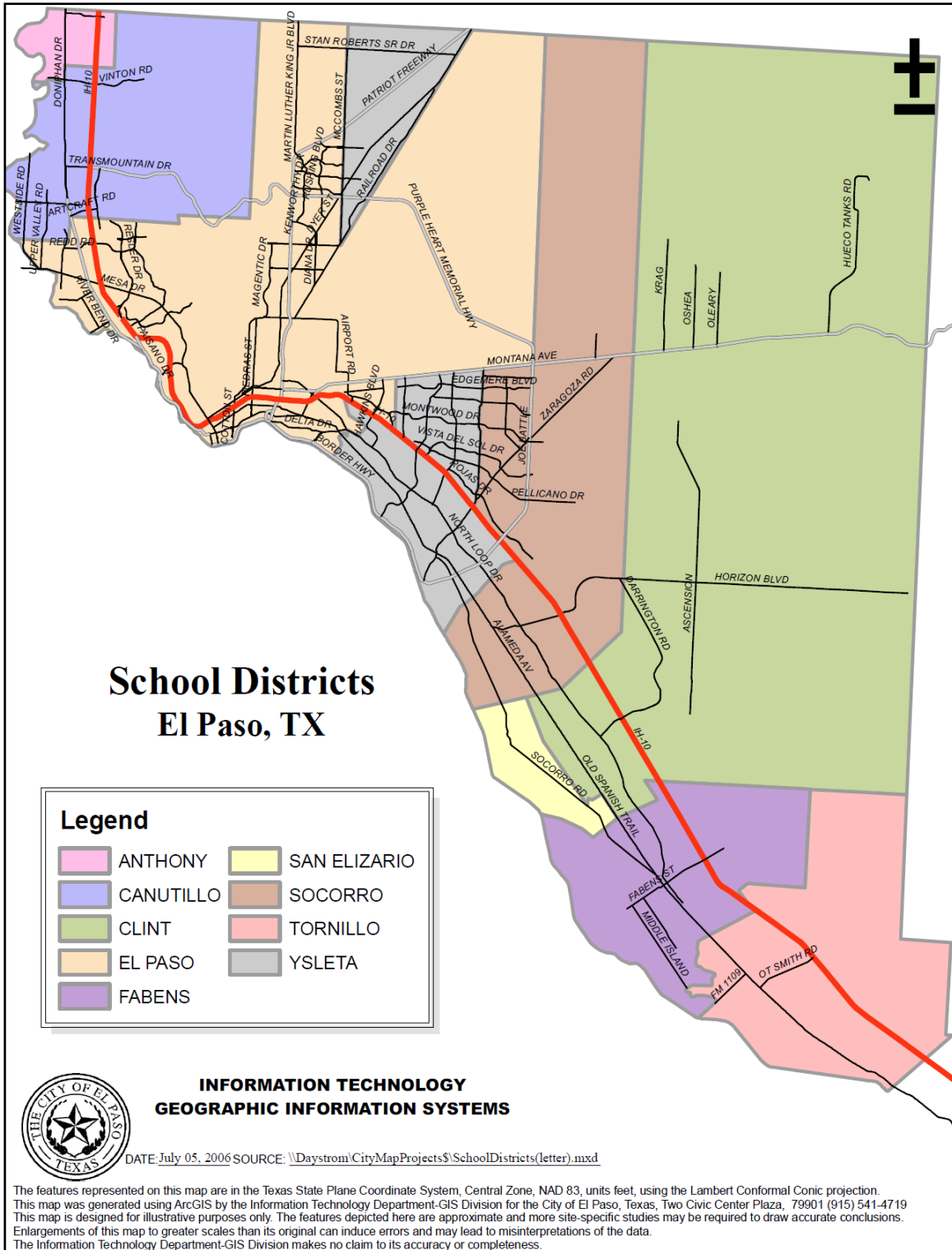


## Appendix D: City of El Paso Zoning Map

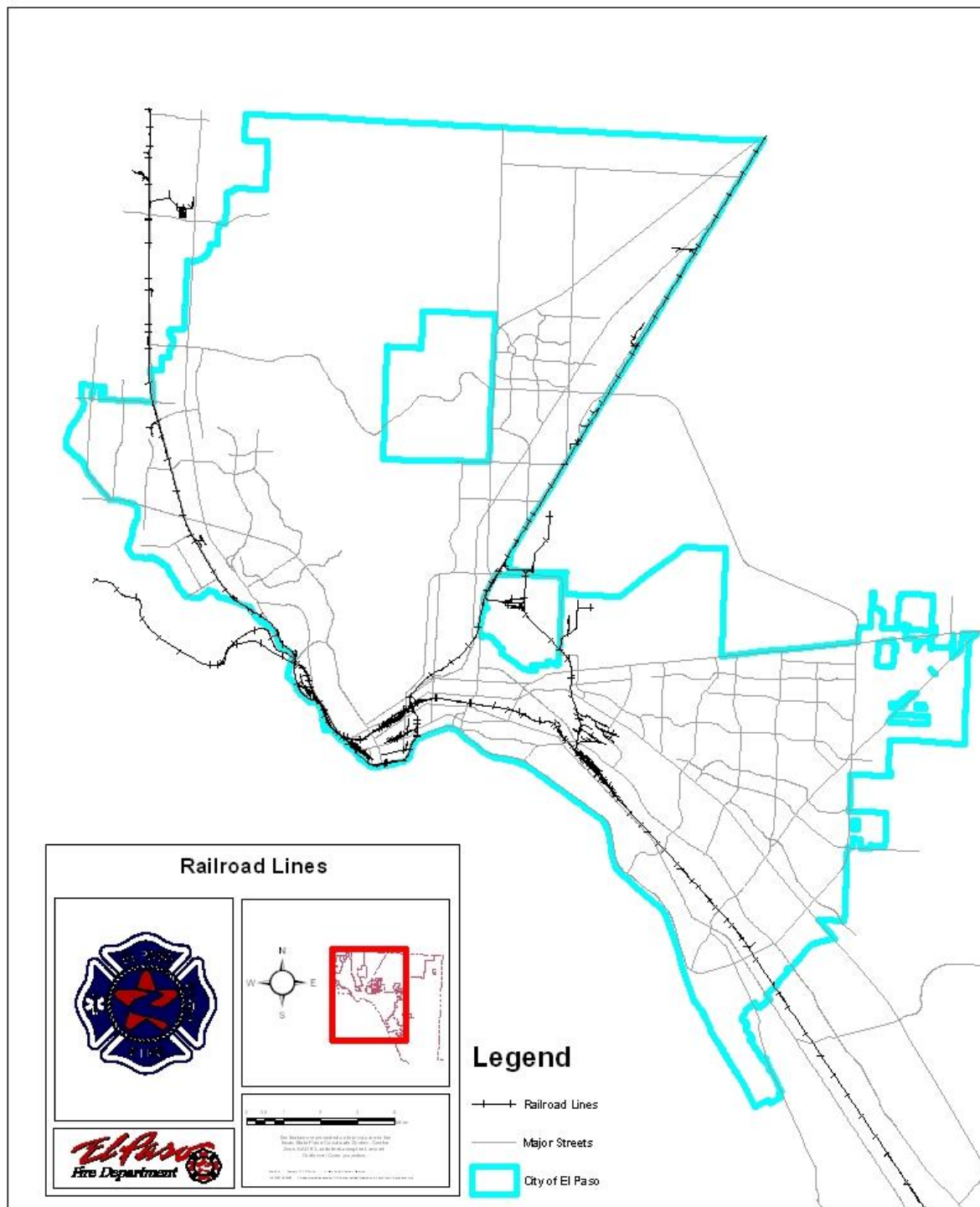




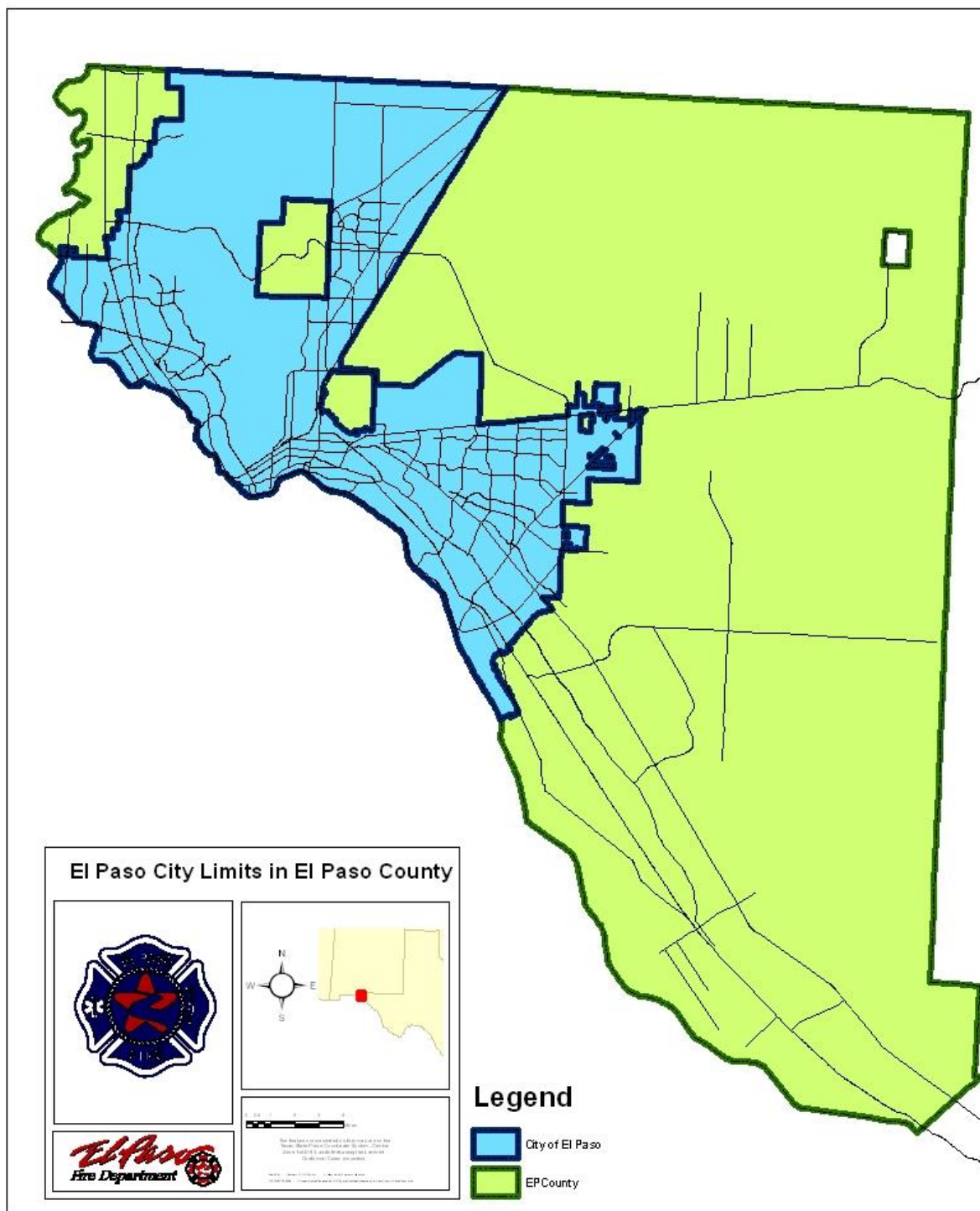
## Appendix E: School Districts in El Paso



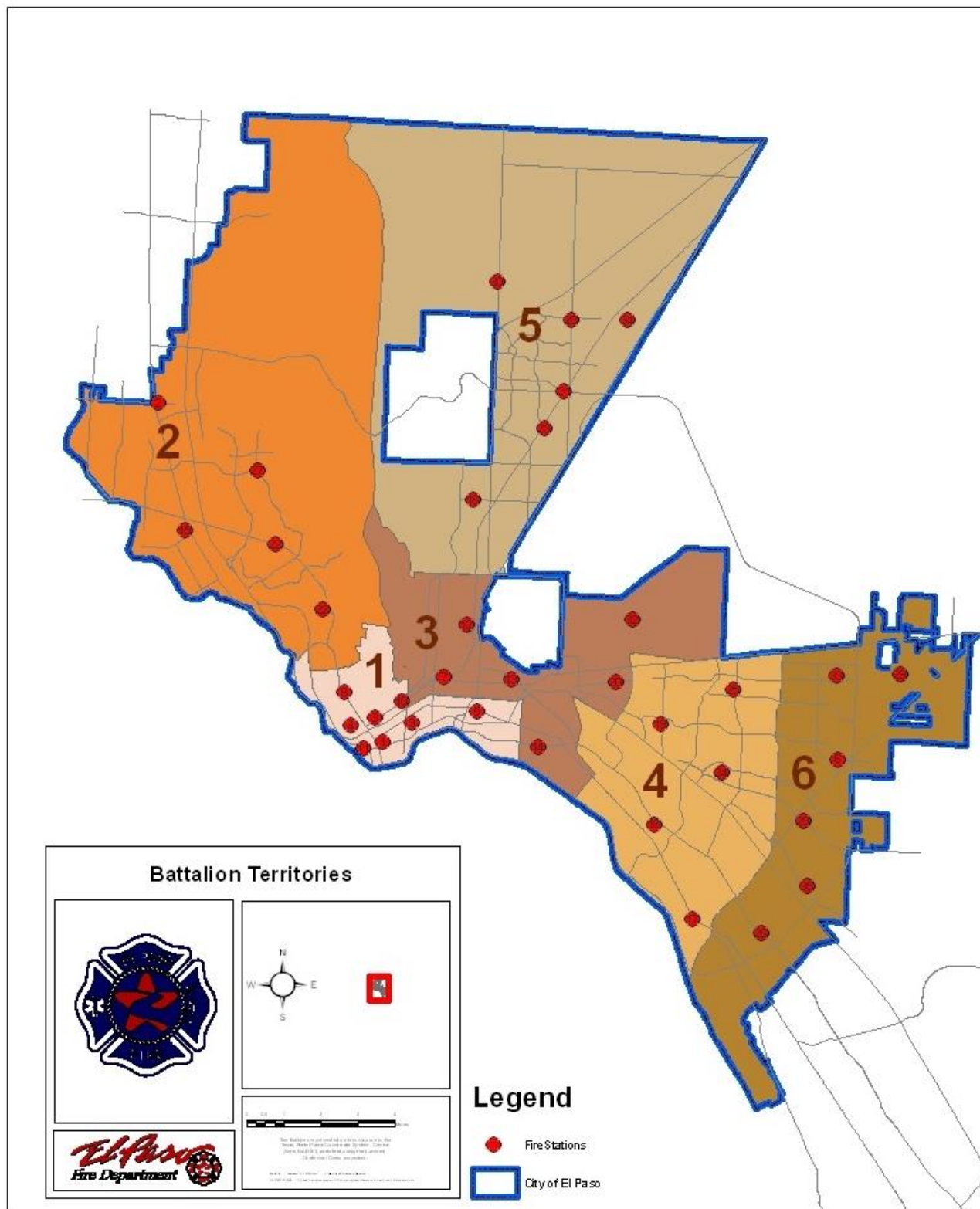
## Appendix F: Railroad lines in El Paso



## Appendix G: Incorporated and Unincorporated Areas in El Paso

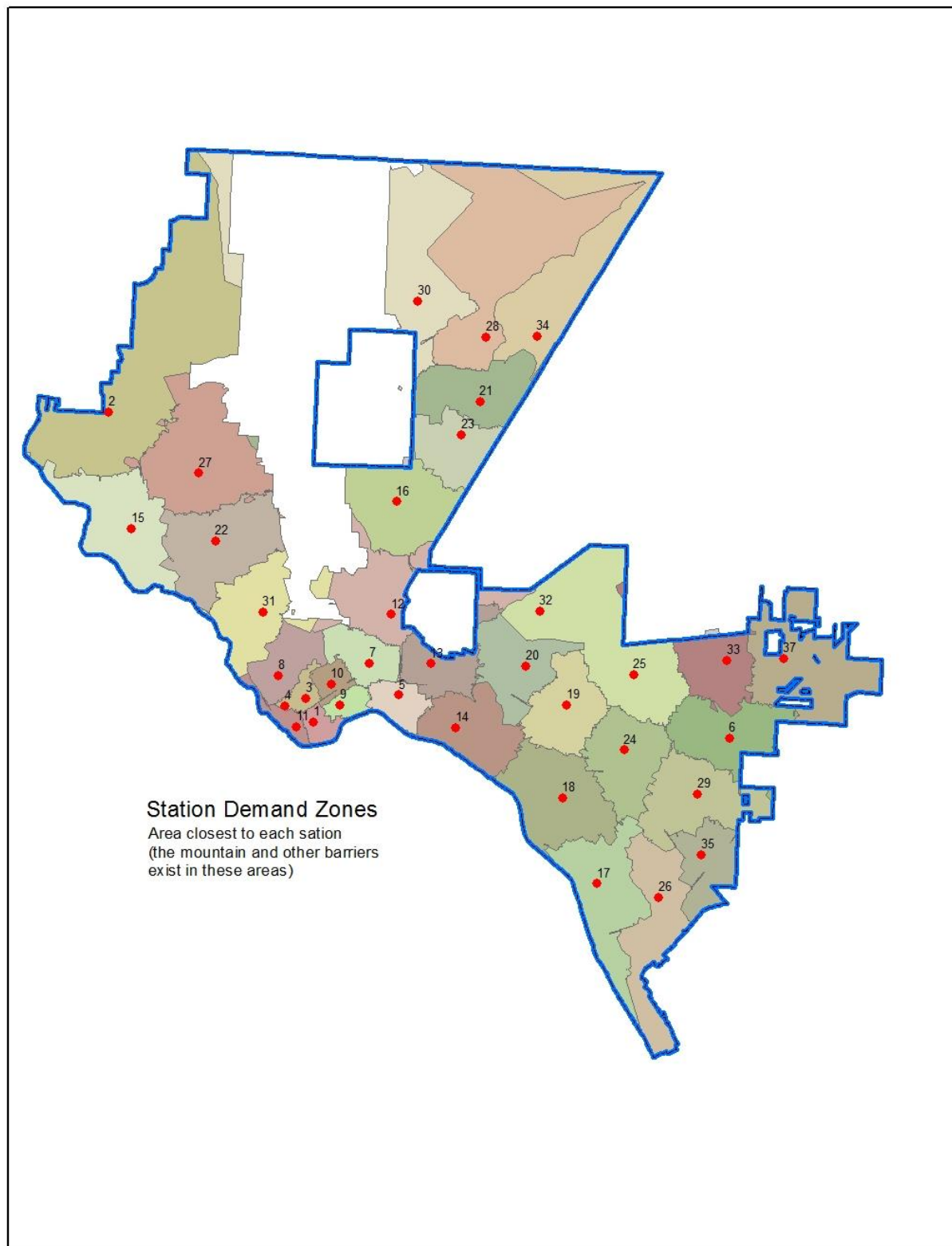


## Appendix H: Battalion District Assignments for EPFD

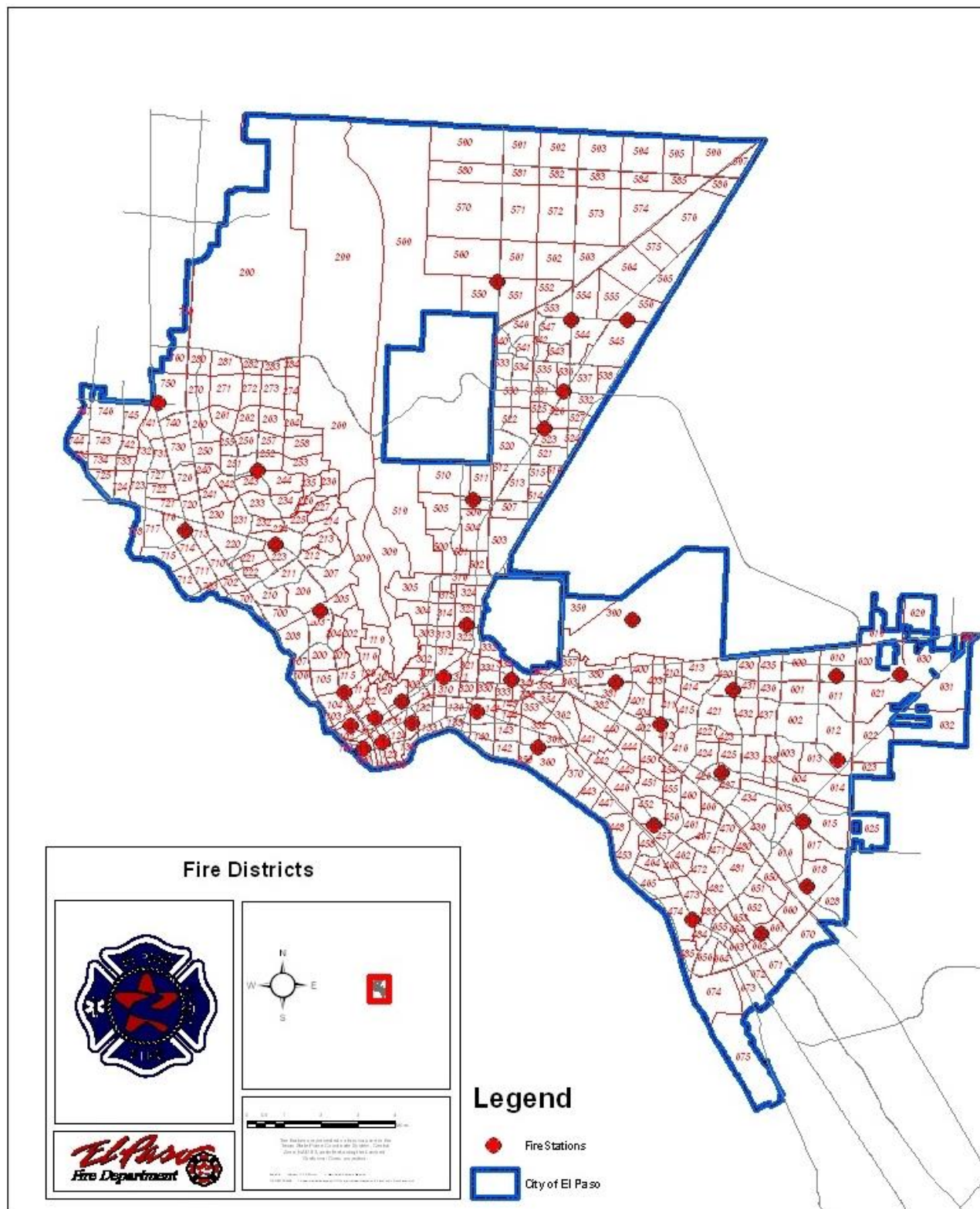




## Appendix I: Station Demand Zones

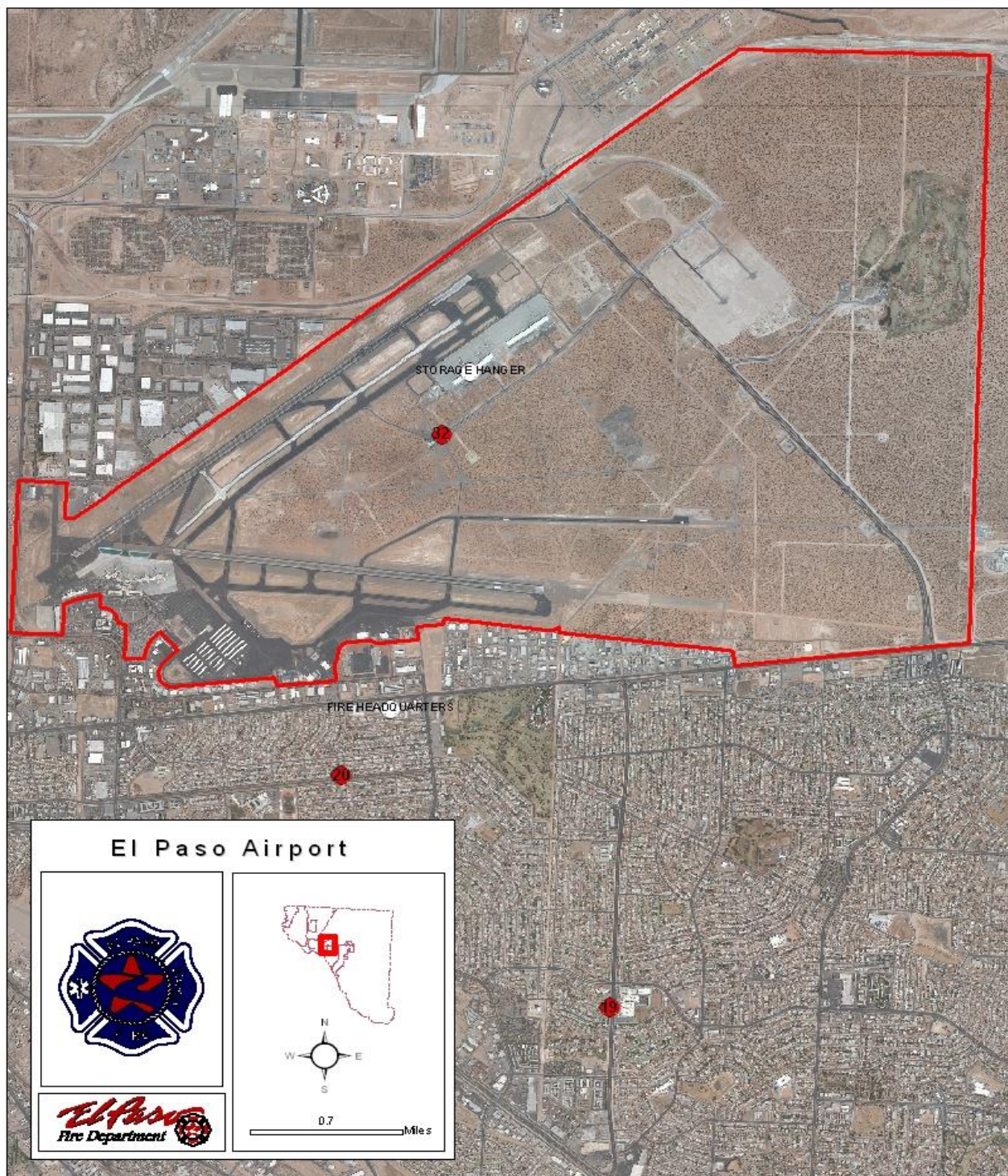


## Appendix J: Fire Districts



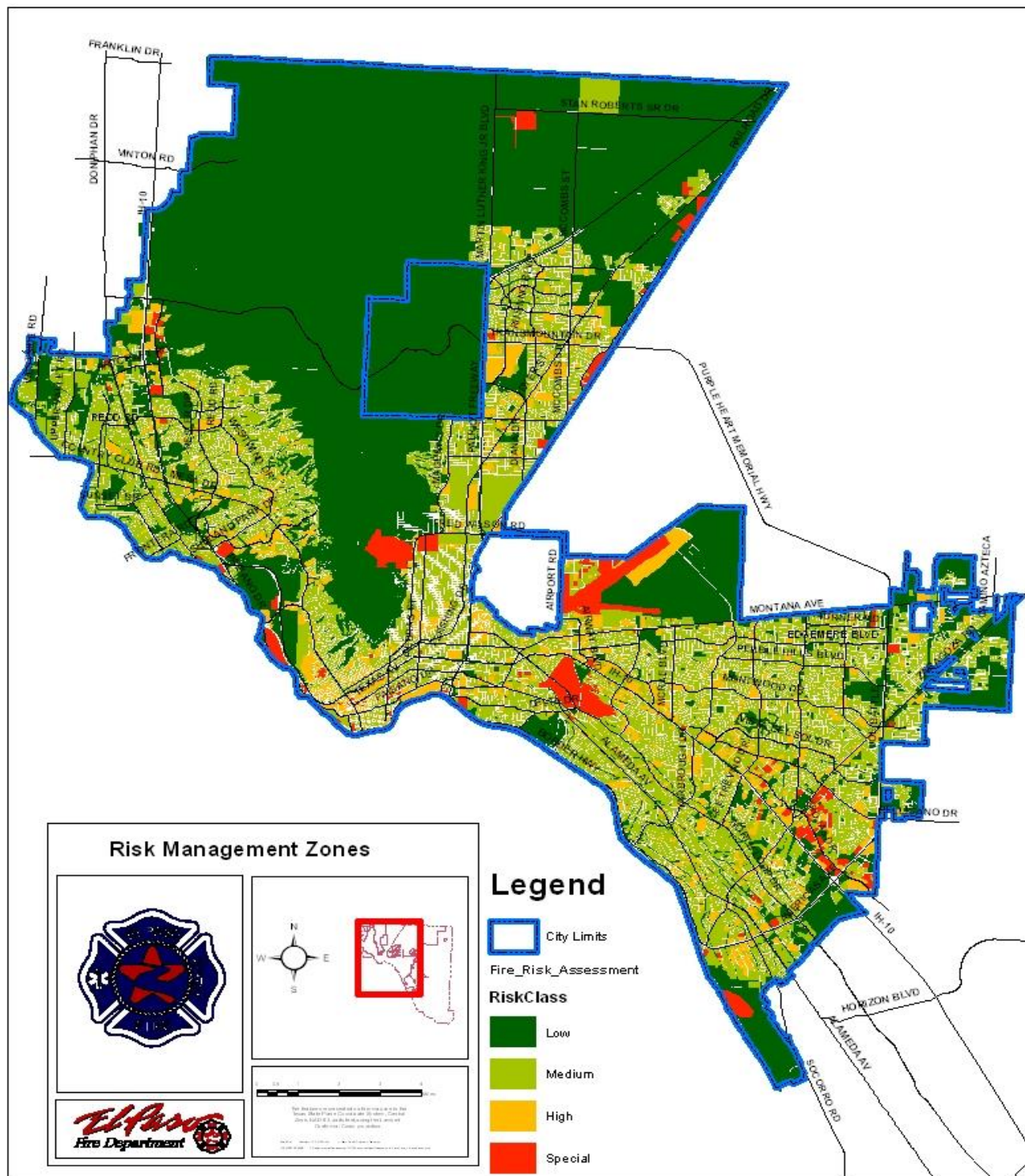


## Appendix K: Airport Property Boundaries

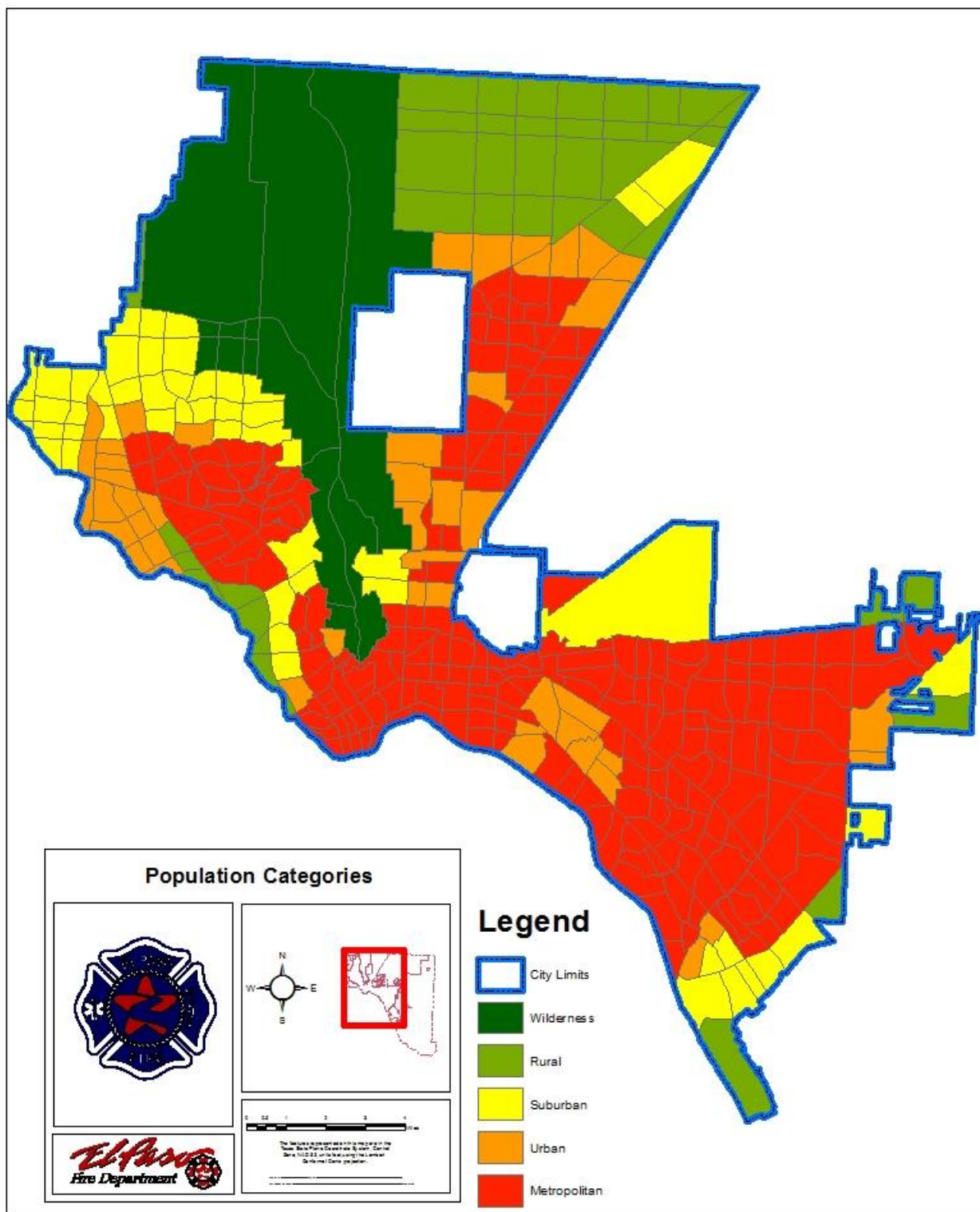




## Appendix L: Risk Management Zones



## Appendix M: Population Categories



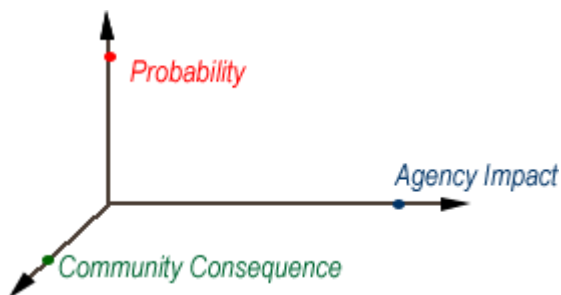
## Appendix N: GIS Risk Assessment Methodology

In assigning these categories, several factors have been taken into account. First, census populations are based on residential areas, and a census tract of high density commercial development without any residential areas would be calculated as a low density population category. Because of this, densely populated nonresidential areas were upgraded to reflect population flow between various land use types. Second, district populations were calculated by using City of El Paso Economic Development 2009 projections within U.S. Census Bureau Census Tract areas. These tract areas were combined with the district areas using a union operation within the GIS. This produced smaller areas that were then re-sampled by calculating the population percentage of each Census Tract area within the district, summing those areas up to find the district population, and dividing by the district area in square miles.

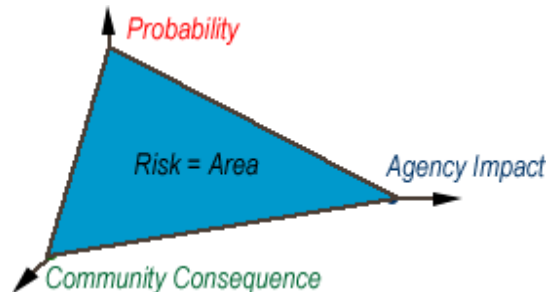
Some districts have a mixture of high and low density areas. Because these areas lower the mean population density calculation, their classification may calculate much lower than neighboring areas (See Figure 25). In these cases, the classifications have been elevated to reflect only the populated portion of the district. These districts will be further subdivided to more accurately reflect land use in the coming year, and will be used for future analysis.

Risk assessment was parcel based, using GIS parcel data defined by the El Paso Central Appraisal District. GIS layers were selected as risk data and were assessed within the parcels. Weights were given to these risk categories based on the relative impact each had on the overall risk. As there is not any definitive work on the relative impact of different risk types to overall risk, these weights were based on the experience of the SOC team in terms of community applicability.

A three dimensional model, as seen in the figure below, was used to assess the overall risk of each parcel area as a function of the probability, community consequence, and agency impact risk scores. In this model, a score in each of the three risk areas is expressed as a point on the corresponding axis of a Cartesian coordinate system.



This function in the figure below is derived from the area of the triangle resulting from connecting these three points.



Using Heron's formula modified for tetrahedrons is shown in the figure above, and given that  $p$  = probability,  $i$  = agency impact and  $c$  = community consequence, the formula used to calculate the risk score is:

$$Risk = \sqrt{\frac{(pc)^2}{2} + \frac{(ci)^2}{2} + \frac{(ip)^2}{2}}$$

The risk score of each parcel was then reclassified into a risk level using the Jenks natural breaks method, in which the data is grouped into classes based on boundaries where there are relatively large jumps in the data values. The Jenks method referred to here is also known as the goodness of variance fit method. In short, the method attempts to maximize homogeneity within groups (selected parcels) and minimize the impact of extreme values. This was done to group similar values most efficiently and maximizes the differences between classes. These parcels were combined with the planning zones (EPFD Fire Districts) to create risk management zones (RMZ's).

## Risk Analysis Considerations

To assess risk, the following data items were used, in the form of GIS feature classes (map layers.)

1. **Community Consequence Data** – What is level of impact on the community an incident would have if the property were destroyed or deemed unusable?
  - a. **Major Employers**- Parcels identified as major employers. These locations are based on facility employee numbers rather than distributed employee numbers (e.g. the City of El Paso is a major employer, but its employees are distributed among multiple facilities. This data was obtained by El Paso Economic Develop Department and converted into GIS.
  - b. **Infrastructure** – Locations important to continuity of quality of life services in the city, including government locations, power generation and control stations, water treatment plants, reservoirs and lift stations, natural gas facilities, telephone switching facilities, cell and communications towers. Electrical transmission lines and gas and



## COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

water piping were not considered at this time, but will be incorporated as this data becomes available. In this scope, transportation networks were also not included.

- c. **General Hospitals**- Full service inpatient hospitals offering emergency room services. This data is evaluated both from the perspective of the difficulty of evacuation as well as the community impact the loss of services would provide.
- d. **Cultural/ Historic Landmarks**- Historic locations and districts, areas of great cultural impact to the community or special interest groups
- e. **Residential Areas** – Parcels identified as single family or duplex, apartments, townhomes, mobile homes, or hotels.

In considering the effect a major fire would have on the community, city infrastructure, especially government facilities, utility locations, and medical facilities, were assessed. Incidents of these locations could cause loss of essential services. Additionally, major employers were considered for economic impact to the community. Large residential complexes were assessed for possible major loss of life, and for the need to relocate a large number of people. Finally, the cultural impact of a major fire was considered. The city contains several historic zones. Some landmarks of local cultural identity were identified, as well as those specific to cultural groups of the area (the Tigua Indian (Ysleta del Sur) reservation, local historic missions, and the Holocaust museum, to name a few).

- 2. **Agency Impact** – What would be the impact on the El Paso Fire Department of an incident at this location? Specifically, would an incident require a greater amount of resources because of the property characteristics, use, or location, and would this affect the department's ability to fulfill its mission in other areas?
  - a. **Schools**- Primary schools (pre-kindergarten to high school)
  - b. **Mental Health Facilities**- Inpatient mental health facilities, with controlled access
  - c. **Water Supply**- Density of hydrant water supply (gallons per minutes from public hydrants per unit area)
  - d. **High Rise Buildings**- Buildings over 8 stories in height, measured from grade. These building are beyond the reach of the highest aerial in service by the El Paso Fire Department.
  - e. **Target Hazards**- Locations in the city which are permitted for hazard processes, as defined by the 2009 international Fire Code and
  - f. **Station Drive Times**- The time in minutes that each area can be reached from the nearest fire station.
  - g. **Child Care Facilities**-Areas designated as commercial child care facilities.
  - h. **Assembly Occupancies**- Buildings permitted to hold groups of 50 or more individuals, which would pose a problem with evacuation in an emergency.
  - i. **Effective Response Force**- The total number of Fire Department personnel that can be dispatched to the location within the NFPA 1710 standard of eight minutes or less.
- 3. **Probability** – What is the likelihood that an incident will occur at the location?
  - a. **Flood Zones** – FEMA flood zone data for El Paso County.
  - b. **Populated Areas**- Those areas which contain developed parcels. Areas that are undeveloped are considered a lower risk due to lower likelihood of life or property loss.



- c. **Poverty Levels-** Census data indicating the percent of the population considered in poverty by
- d. **Populations Over 65-** Census data for percent of population over 65,
- e. **Agency Incident History-** Historic incident locations geocoded by the GIS system and plotted on the map. See Appendix P which shows the risk assessment factor table and the category and rationale for all types of incidents.

# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

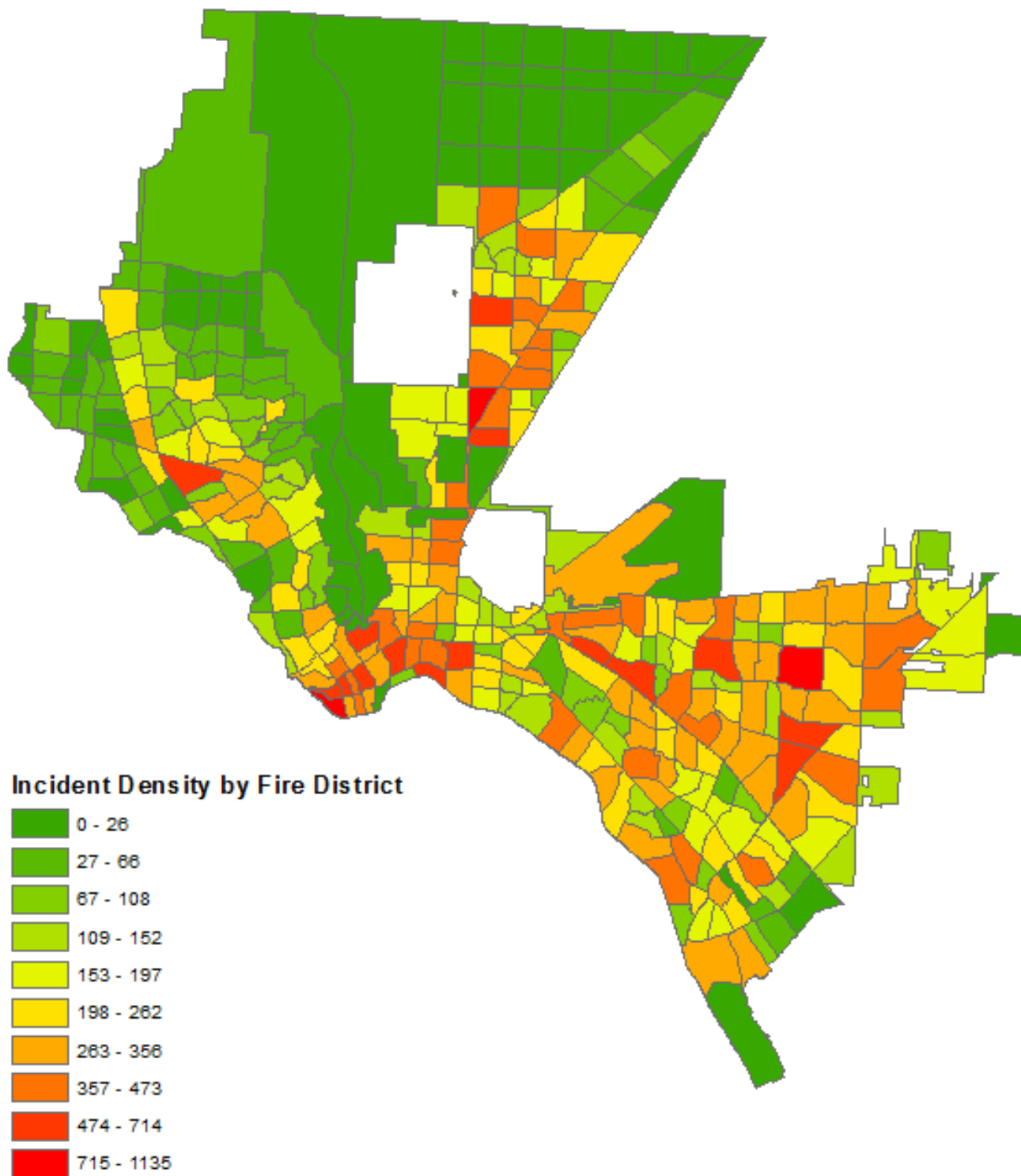
## Appendix O: Risk Assessment Factors

Risk Assessment Factor	Category	Rationale	Fire	Medical	Hazmat	Tech Rescue	ARFF
Major Employers	Community Consequence	Incidents affecting the building or the welfare of the occupants may require long term or permanent closure of these facilities, resulting in large scale loss of productivity that may impact the community economic base.	x	x	x	x	x
Infrastructure	Community Consequence	Incidents at these locations affecting the building or the welfare of the occupants may have some level of impact on the continuity of government or quality of life throughout the community. This impact may be short term and low impact, or may be major and long term.	x	x	x	x	x
General Hospitals	Community Consequence	Incidents at these locations affecting the building or the welfare of the occupants may have an impact on the availability of medical care for the community	x	x	x	x	x
Cultural/ Historic Landmarks	Community Consequence	Locations posing a potential historic or cultural loss to the community.	x		x	x	x
Residential Areas	Community Consequence	Some incidents in residential structures will lead to the need for relocation of individuals/families, with the community impact increasing as more of these structures are affected.	x		x	x	x
Schools	Agency Impact	Special needs population, increased difficulty in evacuation and rescue	x	x	x	x	x
Mental Health Facilities	Agency Impact	Special needs population, increased difficulty in evacuation and rescue	x	x	x	x	x
Water Supply	Agency Impact	Available water supply for fire fighting	x		x		x
General Hospitals	Agency Impact	Special needs population, increased difficulty in evacuation and rescue	x		x		x

# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

High Rise Buildings	Agency Impact	Buildings over eight stories and beyond the reach of EPFD aerial apparatus, requiring additional resources	x			x		x
Target Hazards	Agency Impact	Locations requiring permits by fire prevention code for hazardous processes or conditions, contributing to the danger, or complexity of mitigation, of an incident	x			x		x
Station Drive Times	Agency Impact	Number of minutes from nearest fire station based on street network and speed limits, impacting the distribution of response to incidents	x		x			
Child Care Facilities	Agency Impact	Special needs population, increased difficulty in evacuation and rescue						
Assembly occupancies	Agency Impact	High density population, increased difficulty in evacuation and rescue						
Effective Response Force	Agency Impact	Number of personnel available in eight minutes' drive time from neighboring fire stations	x					
Flood Zones	Probability	Areas identified as flood zones have an increased likelihood of water rescue incidents.					x	
Waterways	Probability	Areas identified as rivers, canals, and drain areas have an increased likelihood of water rescue incidents.						
Populated Areas	Probability	Increased likelihood of emergency incidents in populated areas in correlation to human factors in incident cause	x		x		x	x
Poverty Levels	Probability	Community correlation between low poverty levels and fire and medical rates	x		x			
Populations Over 65	Probability	Community correlation between elderly populations and fire and medical incident rates	x		x			
Agency Incident History	Probability	Incident density calculated from number of fire incidents per unit area from 2008 - 2010; increased likelihood incidents in future based on past history	x		x		x	x

**Appendix P: FY 2014 Incident Density by Fire District**



# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

## Appendix Q: NIST 22 Critical Tasks at a Fire Incident

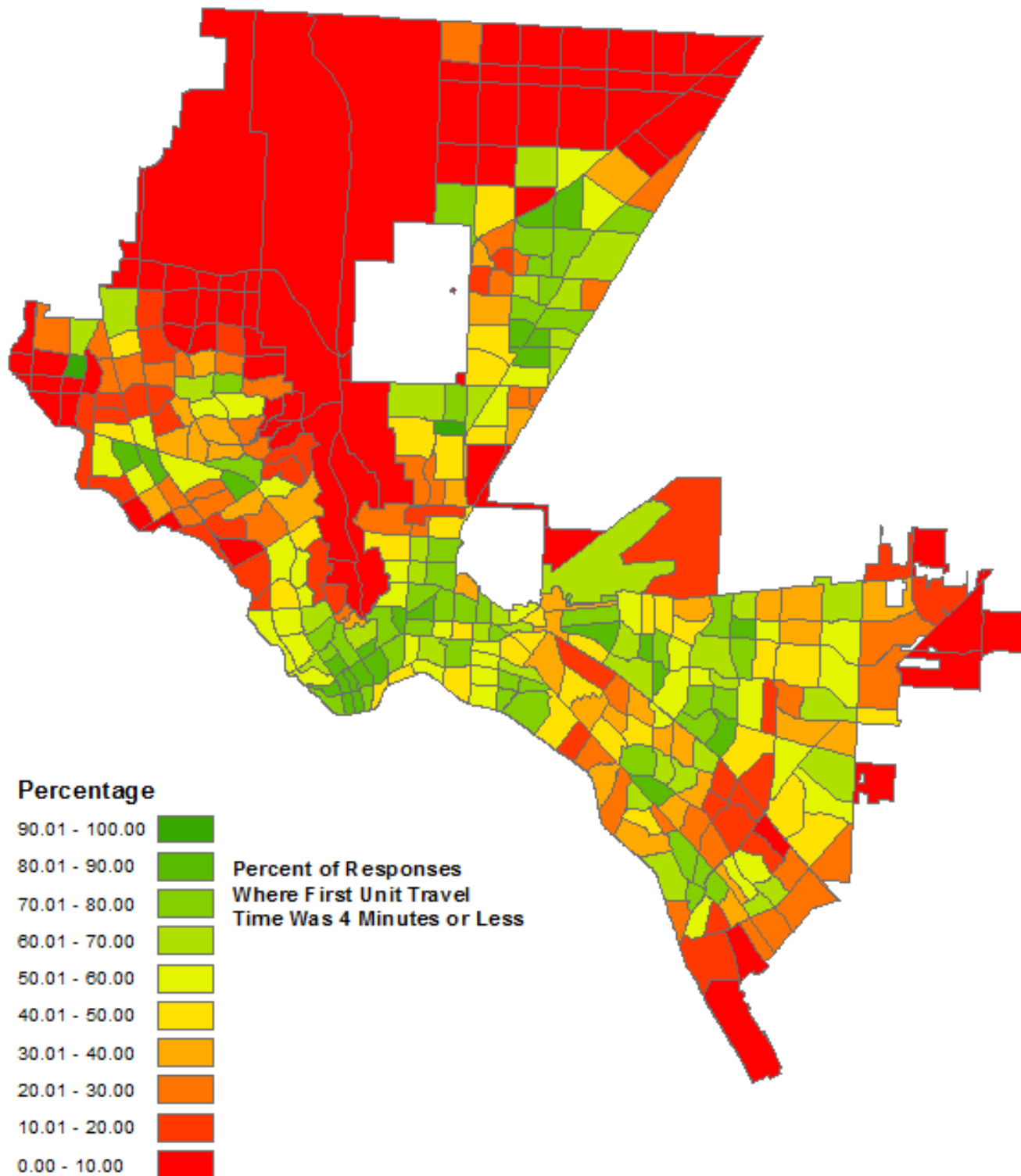
Table 2: Tasks and Measurement Parameters

Tasks	Measurement Parameters	Tasks	Measurement Parameters
1. Stop at Hydrant, Wrap Hose	START - Engine stopped at hydrant  STOP - Firefighter back on engine and wheels rolling	13. Conduct Primary Search	START - Firefighters enter front door  STOP - Firefighters transmit "search complete"
2. Position Engine 1	START - Wheels rolling from hydrant  STOP - Wheels stopped at structure	14. Ground Ladders in Place	START - Firefighter touches ladder to pull it from truck  STOP - 4 Ladders thrown: 3 ladders on the 2 <sup>nd</sup> -story windows and 1 to the roof
3. Conduct Size-up (360-degree lap), transmit report, establish command	START - Officer off engine STOP - Completes radio transmission of report	15. Horizontal Ventilation (Ground)	START- Firefighter at 1 <sup>st</sup> window to begin ventilation (HOLD for 8 seconds)  STOP - Hold time complete - window open
4. Engage Pump	START - Driver off engine  STOP - Driver throttles up pump	16. Horizontal Ventilation (2 <sup>nd</sup> Story)	START - Firefighter grabs ladder for climb. (Firefighter must leg lock for ventilation. HOLD time at each window is 10 seconds)  STOP - All 2 <sup>nd</sup> -story windows open - descend ladder - feet on ground.
5. Position Attack Line (Forward Lay)	START - Firefighter touches hose to pull it from engine  STOP - Flake, charge and bleed complete (hose at front door prepared to advance)	17. Control Utilities (Interior)	START - Radio transmission to control utilities  STOP - When firefighter completes the task at the prop
6. Establish 2 In/2 Out	Company officer announces – "2 In/2 Out established" (4 persons assembled on scene OR at the call of the Battalion Chief/Company Officer)	18. Control Utilities (Exterior)	START - Radio transmission to control utilities  STOP - When firefighter completes the task at the prop
7. Supply Attack Engine	START - Firefighter touches hydrant to attach line  STOP - Water supply to attack engine	19. Conduct Secondary Search	START - Firefighters enter front door  STOP - Firefighters transmit "secondary search complete"
8. Establish RIT	Time that Company Officer announces RIT is established	20. Check for Fire Extension (walls)	START- Firefighters pick up check-for-extension prop  STOP- Completion of 4 sets total (1 set = 4 in and 4 out) This task may be done by more than one person.
9. Gain/Force Entry	START - Action started (HOLD time= 10 seconds)	21. Check for Fire Extension (ceilings)	START - Firefighters pick up check-for-extension prop  STOP - Completion of 4 sets total (1 set = 3 up and 5 down) This task may be done by more than one person.
10. Advance Attack Line	STOP - Door opened for entry  START – Firefighter touches hose  STOP – Water on fire	22. Mechanical Ventilation	START - Firefighters touch fans to remove from truck  STOP - Fans in place at front door and started
11. Advance Backup Line (stop time at front door)	START - Firefighter touches hose to pull from engine bed  STOP - Backup line charged to nozzle		
12. Advance Backup Line/Protect Stairwell	START - Firefighter crosses threshold  STOP - Position line for attack at stairwell		

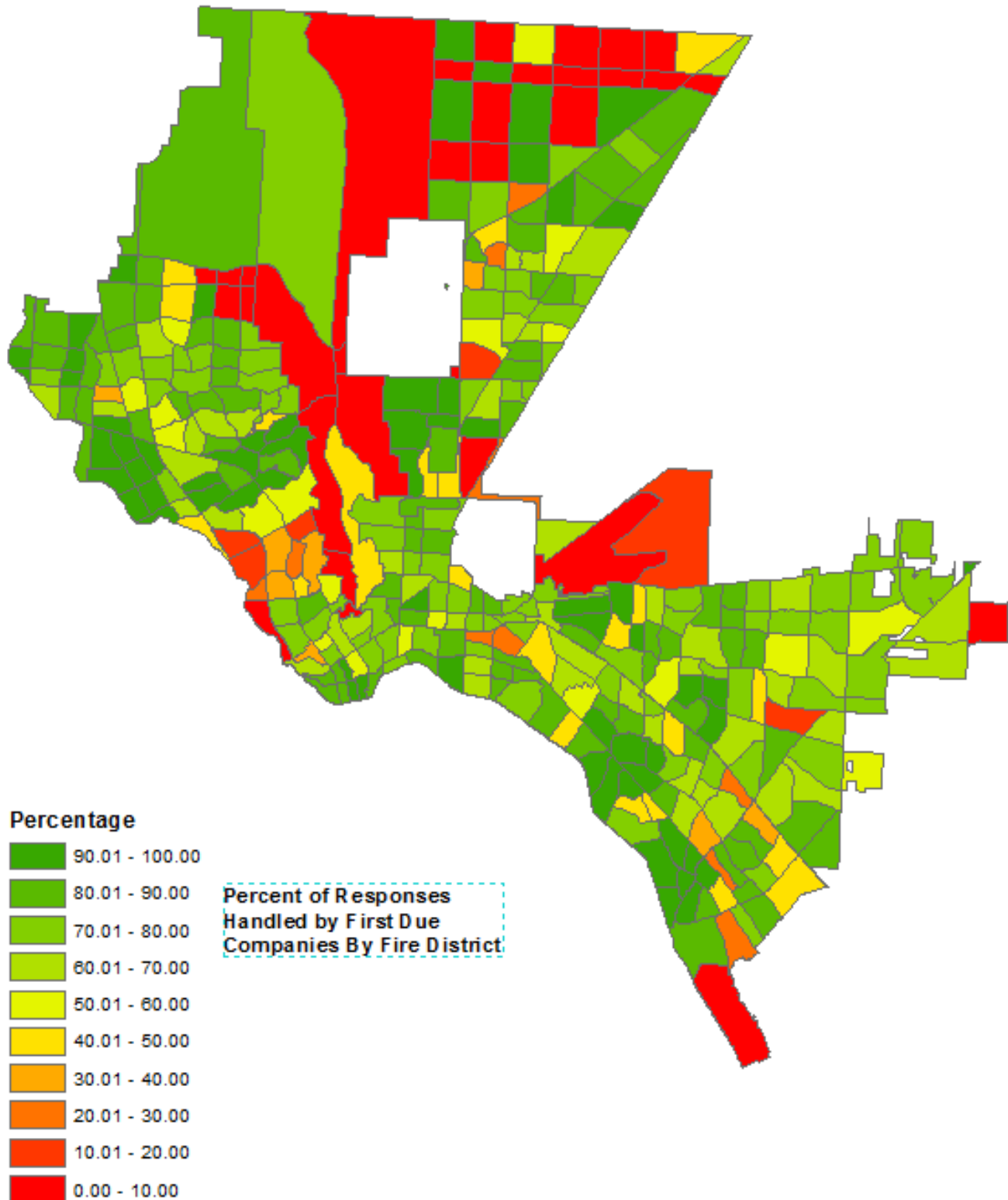
## Appendix R: NFPA 1710. (5.2.4.2.2)

NFPA 1710 – Initial Full Alarm Assignment Capability	
1.	Establishment of incident command outside of the hazard area for the overall coordination and direction of the initial full alarm assignment with a minimum of one individual dedicated to this task.
2.	Establishment of an uninterrupted water supply of a minimum of 400 GPM (1520L/min) for 30 minutes with supply line(s) maintained by an operator.
3.	Establishment of an effective water flow application rate of 300 GPM (1140 L/min) from two hand lines, each of which has a minimum flow rate of 100 GPM (380 L/min) with each hand line operated by a minimum of two individuals to effectively and safely maintain the line.
4.	Provision of one support person for each attack and backup line deployed to provide hydrant hookup and to assist in <u>laying</u> of hose lines, utility control, and forcible entry.
5.	Provision of at least one victim search and rescue team with each such team consisting of a minimum of two individuals.
6.	Provision of at least one team, consisting of a minimum of two individuals, to raise ground ladders and perform ventilation.
7.	If an aerial device is used in operations, one person to function as an aerial operator and maintain primary control of the aerial device at all times.
8.	Establishment of an IRIC consisting of a minimum of two properly equipped and trained individuals.

**Appendix S: FY 2014 Percent of Responses Meeting Benchmarks by Fire Districts**



**Appendix T: FY 2014 Percent of Responses Handled by First Due Units (2013)**





# COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

## Appendix U: Fire Risk Summary by Station Demand Zone

Pumper Territory		Maximum Risk (Resource Needs)		Key Risk (Consequences)		Typical Risks		Isolated Risks
P1	special	high rise	special	high rise	high	multistory commercial	n/a	
P10	special	gen. hospital	special	gen. hospital	medium	single fam homes	n/a	
P11	special	city hall, high rise	special	city hall, high rise	high	multistory commercial	special	water treatment plant
P12	special	gen. hospital	special	gen. hospital	medium	single fam homes	special	quarry
P13	special	large industrial building w. reactor	special	large industrial building w. reactor	medium	single fam homes	n/a	
P14	special	refinery, copper plant	special	refinery, copper plant	medium	single fam homes	n/a	
P15	special	industrial plant, high pile warehouse	special	industrial plant, high pile warehouse	medium	single fam homes	n/a	
P16	special	natural gas facility	special	natural gas facility	medium	single fam homes	n/a	
P17	special	water treatment plant	special	water treatment plant	medium	single fam homes	special	water treatment plant
P18	high	community college, schools	high	community college, schools	medium	single fam homes	n/a	
P19	special	gen. hospital	special	gen. hospital	medium	single fam homes	n/a	
P2	special	industrial plants, high pile warehouse	special	industrial plants, high pile warehouse	medium	single fam homes	n/a	
P20	special	airport	special	airport	medium	single fam homes	n/a	
P21	special	industrial plants, high pile warehouse	special	industrial plants, high pile warehouse	medium	single fam homes	n/a	
P22	special	large shopping mall	special	large shopping mall	medium	single fam homes	n/a	
P23	special	industrial plants, high pile warehouse	special	industrial plants, high pile warehouse	medium	single fam homes	n/a	

## COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

P24	special	industrial plants, high pile warehouse	special	industrial plants, high pile warehouse	medium	single fam homes	n/a	
P25	high	apartments, schools	high	apartments, schools	medium	single fam homes	n/a	
P26	special	industrial plants, high pile warehouse	special	industrial plants, high pile warehouse	medium	single fam homes	n/a	
P27	special	high pile warehouse	special	high pile warehouse	medium	single fam homes	n/a	
P29	special	industrial plants, high pile warehouse	special	industrial plants, high pile warehouse	medium	single fam homes	n/a	
P3	special	high rise	special	high rise	medium	single fam homes	n/a	
P30	special	electric plant	special	electric plant	medium	single fam homes	special	electric plant
P31	high	apartments, schools	high	apartments, schools	medium	single fam homes	n/a	
P33	special	gen. hospital	special	gen. hospital	medium	single fam homes	n/a	
P34	special	tank farm, industrial plant	special	tank farm, industrial plant	medium	single fam homes	n/a	
P35	special	industrial plants, high pile warehouse	special	industrial plants, high pile warehouse	medium	single fam homes	n/a	
P5	special	gen. hospital, water treatment plant	special	gen. hospital, water treatment plant	medium	single fam homes	n/a	
P7	special	industrial plant	special	industrial plant	medium	single fam homes	n/a	
P8	special	water treatment plant, industrial plant	special	water treatment plant, industrial plant	medium	single fam homes	n/a	
P9	special	industrial plant	special	industrial plant	medium	commercial warehouses	n/a	
Q28	high	schools, mobile homes	high	schools	medium	single fam homes	n/a	
Q6	special	high pile warehouse	special	high pile warehouse	medium	single fam homes	n/a	